

The United States MILLER

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The Nagel & Kaemp System of Milling.

THEIR DISPLAY AT THE LONDON EXHIBITION OF MILLING MACHINERY.

The UNITED STATES MILLER is enabled to present to its many readers descriptions of some of the milling systems which were prominently displayed at the recent Exhibition in London. In this number we give a description with two illustrations of the Nagel & Kaemp System as it appeared at the Exhibition. Messrs. Nagel & Kaemp of Hamburg, Germany, represented by their English agents, Messrs. Sanderson and Gillespie of Mark Lane, London, showed their system in operation in a structure five floors in height, 39 feet in length by 36 feet in width, and weighing with machinery 150 tons. The exhibit consisted of an

Esq., publisher of *The Miller*, London,) show the general arrangement of the machinery as it was shown at work in the Exhibition hall. This exhibition mill works intermittently. The wheat is crushed in the rollers a_1 , when it passes at once into the side of the dismembrator indicated by b_1 . The product is then subjected to the filter f_1 , by which any moisture which may have been evolved during the previous operations is removed. After this it is elevated to the centrifugal dressing machine c_1 by elevator g_1 , where the first separation takes place in the shape of heavy bran, which proceeds directly to roller mills a_2 and a_3 which crush the small and the large bran respectively. These grades of bran on being crushed in the manner specified, are brought together again upon entering the dismembrator at the side

b_2 and then pass through the filter f_2 . The product now reduced to light bran and meal is elevated to the centrifugal dressing machine c_4 by elevator g_2 , from the tail end of which the finished bran is discharged.

The process of rolling the wheat and bran simultaneously as described was carried on daily during the Exhibition, and the finished products—first run flour, bran, bran flour and offals were sacked during the time.

The different assortments of semolina and middlings, after being subjected to treatment by the purifier d , were collected in hoppers until the process of rolling the wheat and bran terminated, when the work of reducing the semolina and middlings to flour commenced.

The machinery used in the first process is the same as that now used, with the exception of a slight alteration in the clothing of the dressing machines c_2 , c_3 , and c_5 . The products of the several processes—semolina and middlings reduction—were middlings flour, tailings, germs and offals. The middlings flour was sacked off, the tailings, or such of them as were worth it, were returned to purifier d and afterwards collected into hoppers until this process was finished. The germ was separately extracted and remained perfectly distinct from the offals which were sacked by themselves. After the middlings process is completed, the purified tailings are treated by the same machinery, the product being flour,

tailings and offals. The aim of the exhibitors is to show the machines that are absolutely necessary to the working of their system for the purpose of enabling millers to form a correct impression of its action and results, which is in operation in many parts of Great Britain and on the Continent. All grades of wheat were treated during the exhibition, including soft English wheat.

Checkers or No Bags.

JOHN W. HINTON, OF MILWAUKEE, TELLS THE FOLLOWING STORY TO THE "UNITED STATES MILLER."

Good stories are often told about millers, their taking of tolls, etc. I call to mind one which I have never seen in print. Some of

your readers will no doubt remember Mr. Hawks, who many years ago, and for a long time, kept Hawks' Tavern at Delafield, Waukesha county, Wisconsin. Mr. Hawks was a very fine looking old gentleman, at the time of the occurrence I now relate. He had hair white as snow, finely formed features, flowing beard of a silky-pearl white color, was never off his balance, always cool and collected, good humored, obliging, and charitable and kind hearted to all, as many a poor fellow, who had to tramp from Milwaukee to Fox Lake, or other parts of Dodge county, say thirty to thirty-three years ago, will bear witness, and remember with gratitude.

Well, Hawks ran a grist mill as well as kept tavern, and as millers were scarce in early days he did a big business in custom grinding, taking for toll about one-eighth. An old farmer who was noted for his meanness ("picayunishness" as it was then termed) had taken a grist just before the dry time came which caused the mill to shut down for repairs. After calling several times for the grist and

always without any satisfaction, the old farmer at length got mad and demanded the grist which had really been lost in the confusion of repairing the mill. Hawks was "posed" but in no wise disconcerted and said to the farmer: "Well, I suppose you're willing to do the fair thing, ain't you? and give a fellow a fair chance." The farmer assented. "Well," said Hawks, "now I'll tell you what I'll do: The grist has gone to —, but I'll play you a game of checkers to see who has the bags." The farmer left, concluding there was not much show for grist or bags.

SUBSCRIBE for the U. S. MILLER.

THE CARR DISINTEGRATING SYSTEM.—One of our esteemed British exchanges, *The Farmer*, in reviewing the late London Milling Exhibition, speaks of Carr's Disintegrator, which was in operation there, as follows: This consisted of a machine, occupying 13 ft. by 5 ft., capable of doing the work of ten millstones, with 40 horse-power instead of 60 horse-power. It consisted of two steel discs, about 3 ft. in diameter, studded all over with steel pins, some 2 in. long and half an inch thick. These discs, revolving 800 per minute, close to but not touching each other, cause the wheat, by centrifugal force and percussion, to break up into the best meal, which, when afterwards separated, shows a series of fine flour, middlings, semolina, bran, that favorably compared with any on view. This machine, at work in

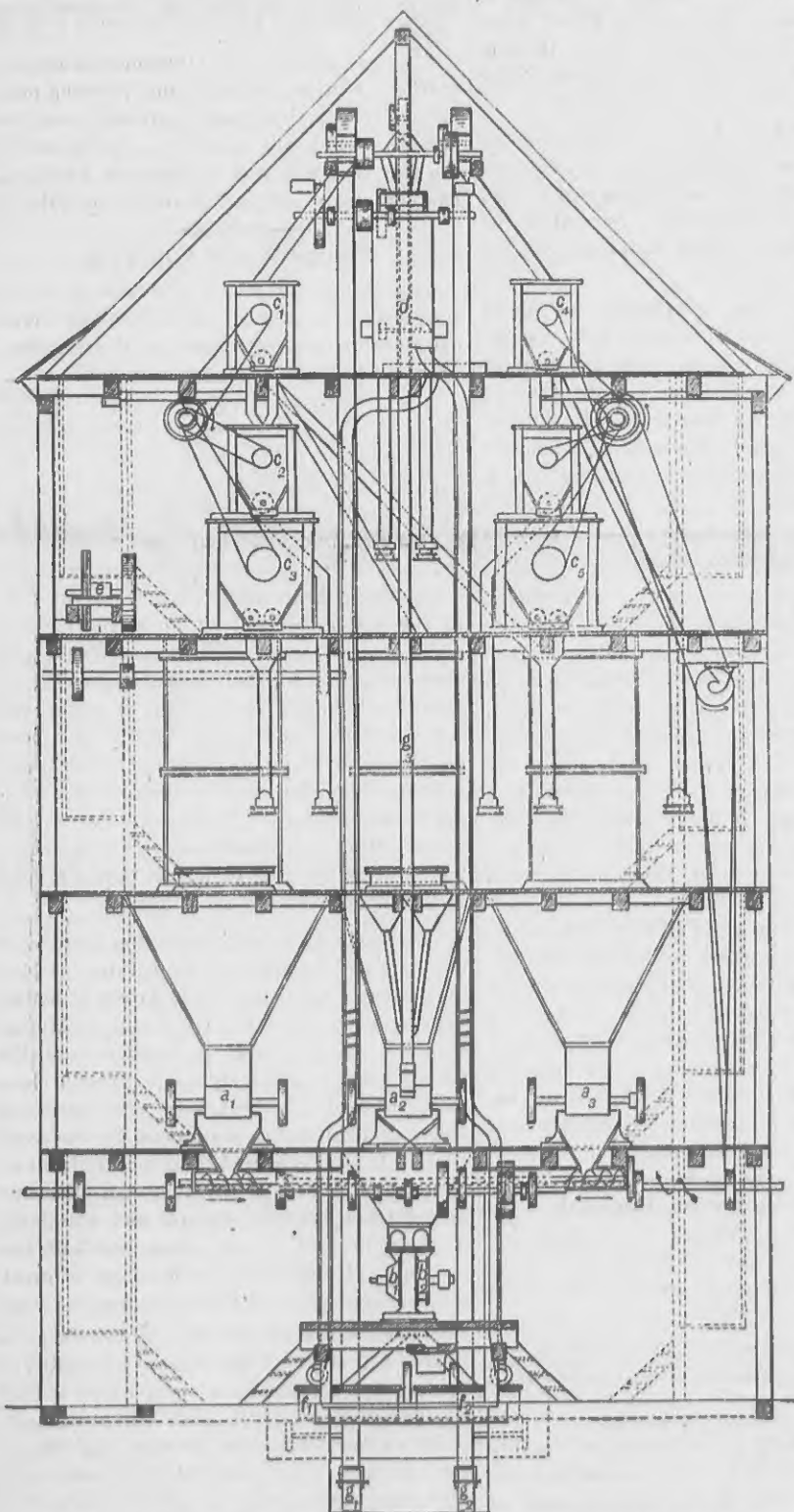


FIG. 1. NAGEL & KAEMP'S EXHIBITION MILL.—LONGITUDINAL SECTION.

arrangement of 8 chilled iron roller mills, working at equal speeds, one double sized dismembrator, two automatic filters, five centrifugal dressing machines, one Prokopec middlings purifier, the first one exhibited in Great Britain with shafting elevator and fan.

On the ground floor the dismembrators, filters, elevators and main shafting are placed. The second floor is devoted to sacking flour and offal. The third floor contains the flour dressing machines; the friction windlass for hoist and the middlings from the purifier are sacked here. The fourth floor contains the scalping reels for the wheat meal, the Prokopec purifier and the stove room. The engravings (for which we are indebted to Wm. Dunham,

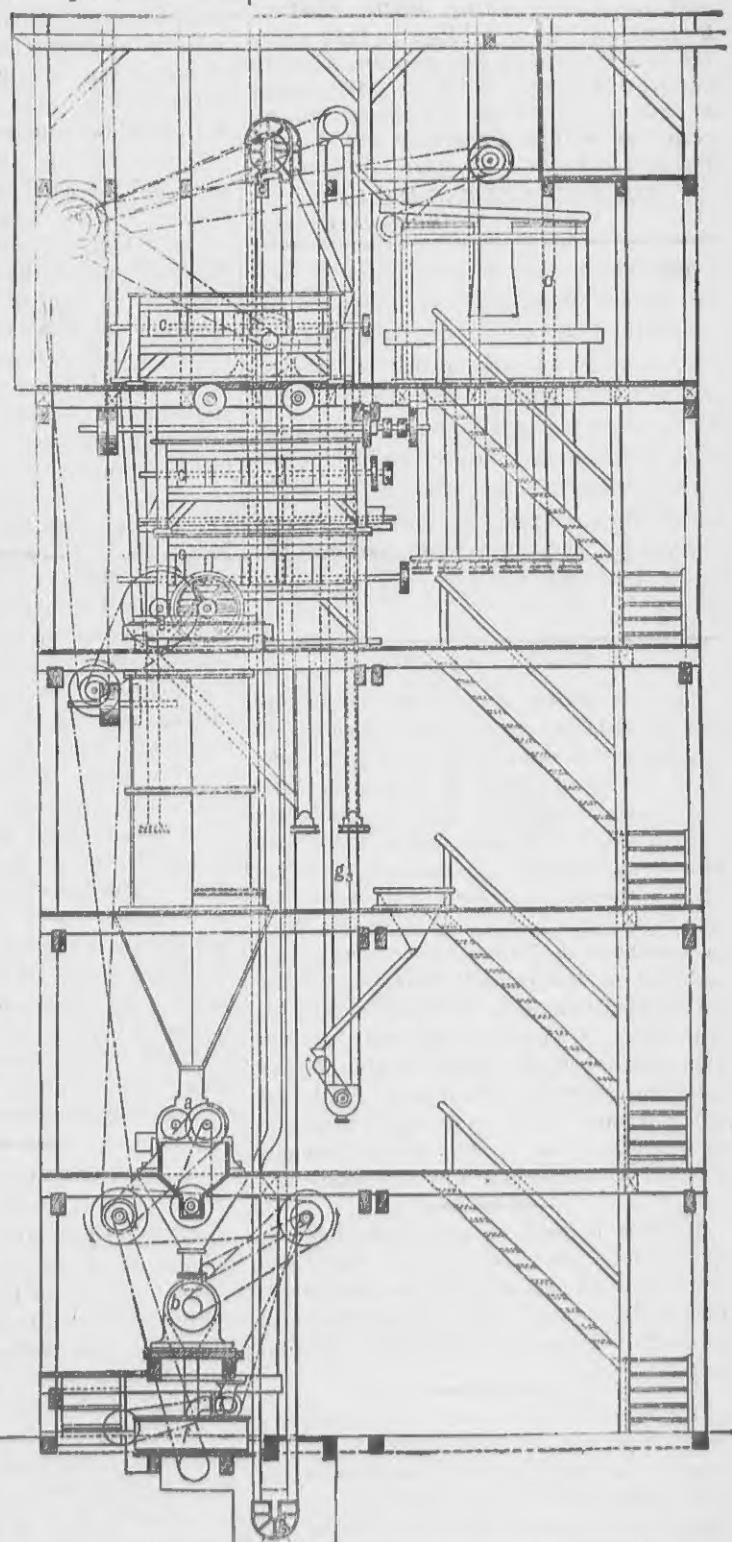


FIG. 2. NAGEL & KAEMP'S EXHIBITION MILL.—CROSS SECTION.

Paris, at Cardiff, and elsewhere, is said to be successful, and causing as it does the wheat itself to make its own flour, the system deserves full trial. £. s. d. is the test of this as all other systems; it is not enough to produce good results, for they must also be good at a cheap rate of production.

W. S. Hall, of Steele City, Neb., has ordered of Nordyke & Marmon Co., of Indianapolis, Ind., a four-run mill, driven by two Lefell turbines, and will be operated on the latest improved principles in new process milling with stones.

UNITED STATES MILLER.

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ANNOUNCEMENT:

WM. DUNHAM, Editor of "The Miller," 60 Mark Lane, and HENRY F. GILLIG & Co., 440 Strand, London, England, are authorized to receive subscriptions for the UNITED STATES MILLER.

MILWAUKEE, JULY, 1881.

We send out monthly a large number of sample copies of THE UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE MILLER to you for one year.

MILLERS' DIRECTORY.

All mill-furnishers, flour brokers or other parties desiring to reach the flour mill owners and millwrights of the United States and Canada, should have a copy of the above named work. It contains about 15,800 names with Post-office addresses, and in many cases (notably in Wisconsin and Minnesota) gives the number of runs of stone, sets of rollers, and kind of power used, or the capacity in barrels. A limited number of copies only have been printed. Upwards of 200 of the leading mill-furnishing houses and flour brokers in this country and several in Europe have already secured copies. Send in your orders at once. Price Five Dollars, on receipt of which Directory will be forwarded post-paid by mail. Address,

UNITED STATES MILLER,
MILWAUKEE, WIS.

The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.

A Word to Advertisers.

The advertising columns of the UNITED STATES MILLER are of great value to all desiring to reach the milling and grain trade. It is sent to all millers in the United States and Canada at intervals (whether subscribers or not), whose names and addresses we have been able to obtain. It is on file in the offices of U. S. Consuls in all parts of the world, and also in the principal Chambers of Commerce in America and Europe. Our foreign subscription list is constantly increasing, as also we are glad to note is our foreign advertising patronage. We have received many letters of high approval of the UNITED STATES MILLER from subscribers and advertisers. Parties desiring further particulars in regard to amount of circulation, rates, etc., will be promptly supplied with information by addressing us.

MILLERS in need of rubber goods of any kind or description can have their wants supplied at bottom figures by the Goodyear Rubber Co., of Milwaukee. Read their advertisement in another column and then write to them for prices.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

THE Electric Purifier Co. of New Haven and New York have just closed contract with Messrs. Gunn, Cross & Co., of Minneapolis, for the manufacture and sale of Electric Purifiers in the Northwest. These purifiers are in such great demand that it has been found to be absolutely necessary to make especial provision for supplying the Northwest.

We cordially recommend our readers to subscribe for The Miller, London, England. It is a milling journal of great value not only to English but to American millers. It is the largest milling paper in the world. The cost of subscription is but \$1.50 per year post-paid

to the United States. We will receive subscriptions for The Miller at the above price. Address orders to the UNITED STATES MILLER, Milwaukee, Wis.

THE Minneapolis Millers' Association will probably soon be a thing of the past. Messrs. O. A. Pillsbury & Co., one of the firms which has hitherto most energetically supported it, have given notice that they will withdraw from the syndicate, and several other firms have expressed their intention to do likewise. It is now proposed to establish a regular Chamber of Commerce in Minneapolis, and it will become one of the most important wheat centres in this country.

A CORRESPONDENT asks us if the Cochrane Patent has expired or not? The original Cochrane patents were issued to Wm. J. Cochrane, Jan. 6th, 1868, numbered 37,317 and 37,320. These and other patents were all reissued, and in a case brought before the Supreme Court of the United States and decided March 19th, 1877, in favor of the complainants. The principal patent sued on in this case was a reissue of Patent No. 37,317, said reissue being numbered 5,841, dated April 21st, 1874. So, as we understand it, the Cochrane Patents are still in force. This question comes to us as we are about going to press, and we have not time to look the matter up in detail now, but will write further on the subject for our August number.

A WISCONSIN SUMMER RESORT.—Among the many beautiful summer resorts in Wisconsin there is none at which a party can have a pleasanter time than at Nagawicka Cottage, at Delafield, Wis. The lake, which lies directly in front of the cottage, is a favorite resort for fishermen. Boats and tackle are in abundance, and the hotel supplies everything that could be desired. George Audley, the proprietor, is a host that tries to please his guests. We would advise those of our readers who desire a few days of elegant recreation and sport to make him a visit. Mr. Audley's conveyances meet passengers on the Milwaukee and St. Paul Railway at Nashota. From that station it is a pleasant drive over a beautiful country of three miles. Those who have paid this beautiful lake a visit once, are sure to repeat it if the opportunity presents itself. The distance from Milwaukee is but 28 miles.

INDIANA MILLERS.—The Indiana State Millers' Association met in Indianapolis June 27th, and was attended by a number of leading representatives from various parts of the State. The following officers were elected for the ensuing year: J. R. Callendar, Vincennes, President; John A. Thompson, Edinburg, Vice-President; R. Thomas, Columbus, Secretary and Treasurer; R. L. Thompson of Terre Haute, Nick Ellis of Edinburg, and Joseph Pollock of Madison, Executive Committee. The Association being delinquent in its assessments to the National Association, a resolution was adopted providing that a draft should be drawn for \$12 on each delinquent member, any one not honoring the same to be dropped from the list of members. Reports indicated that the present wheat crop of the State will be about half a full crop. The Association adjourned sine die.

Immigration—May, 1881.

The Chief of the Bureau of Statistics furnishes the following information in regard to immigration into the United States:

There arrived in the customs districts of Baltimore, Boston, Detroit, Huron, Key West, Minnesota, New Bedford, New Orleans, New York, Passamaquoddy, Philadelphia, and San Francisco, during the month ended May 31st, 1881, 123,999 passengers, of whom 117,482 were immigrants, 3,447 citizens of the United States returned from abroad, and 3,070 aliens not intending to remain in the United States. Of the total number of immigrants, there arrived from England and Wales, 10,700; Ireland, 18,879; Scotland, 2,275; Austria, 3,574; Belgium, 197; Denmark, 2,060; France, 640; Germany, 34,310; Hungary, 415; Italy, 1,783; Netherlands, 2,800; Norway, 6,812; Poland, 813; Russia, 451; Sweden, 16,528; Switzerland, 1,511; China, 1,406; Dominion of Canada, 11,418; and from all other countries, 916.

The number of immigrants arrived in the above-named districts during the eleven months ended May 31st, 1881, was as follows:

From Germany, 175,806; Dominion of Canada, 110,611; England and Wales, 57,861; Ireland, 61,796; Scotland, 12,628; China, 7,448; and from all other countries, 188,649. Total, 564,294.

Milwaukee Items.

A Milwaukee mechanic will soon place before the milling public his newly invented roller mill. The UNITED STATES MILLER will contain the first description of it published.

BURNED.—Richard Davis' Marine Boiler Works. Loss, \$10,000. Insurance, \$4,400. Works are being rebuilt and all contracts will be filled with but little delay. It takes something worse than a \$10,000 fire to interfere with Richard Davis' business.

Messrs. Weisel & Vilter, manufacturers of steam engines, Milwaukee, Wis., are building a 220 horse-power engine (34x48) for Messrs. Pfister & Vogel, the well known Milwaukee tanners.

Messrs. Weisel & Vilter, the Milwaukee steam engine builders, are building three engines for the Milwaukee Gaslight Company.

Smith Bros. are making the plans for completely rebuilding the flour mills at Stone Bank, Wis.

Personal.

We were favored, June 10th, with a pleasant call by Mr. A. Syme of Menasha, Wis., one of the most energetic, go-ahead millers in this State.

C. H. Near, formerly head miller in the Riverside Mills, Appleton, Wis., has gone to Youngstown, O., to run Homer Baldwin's new roller mill. F. J. Mitchell is now head miller at the Riverside Mills.

WE were pleased to receive a call, July 1st, from P. G. Monroe, Esq., of The Millers' Journal, N. Y., and G. S. Cranson, Jr., of the firm of Cranson & Son, manufacturers of the Roller Buckwheat Shucker at Silver Creek, N. Y.

Philo D. Mickles, Esq., the representative of the Denchfield patent cases, has been in Milwaukee the greater part of the past month, looking after his interests. Several of the Milwaukee millers have officially become aware that he was here.

George Smith Esq., of the firm of Smith Bros., mill-builders, Milwaukee, Wis., has returned from California, where he has been for nearly a year engaged on various jobs of building and refitting flour mills. He will return soon and establish an office and supply depot there for the accommodation of millers on the Pacific Slope.

Egyptian Corn.

Dhoura, or Egyptian corn, is attracting a great deal of attention in the Western portion of Kansas, which has a dry climate. The plant grows well there and is found to be an excellent grain for the use of man and beast. It is a sort of cane and grows something like sorghum. The seed forms on the top of the stalk, and curves over and hangs down like a bunch of grapes. It looks much like rice. Official analysis has shown that it possesses greater nutritive powers than Indian corn (maize), and farmers prefer it for stock feeding. It yields from 15 to 40 bushels per acre, and it will stand a great deal of dry weather. The heads are gathered into a wagon and the grain is threshed out in a threshing machine, the same as wheat. It makes a very palatable flour when ground, resembling an equal mixture of maize and wheat flour. This plant will undoubtedly prove of inestimable value to our Western States and Territories.

From Manchester, England.

AMERICAN FLOUR IN EUROPE—THE BENEFIT OF REGULAR STANDARDS OF FLOUR—AN INTERESTING COMMUNICATION FROM CONSUL-GENERAL ALBERT D. SHAW.

[It is with pleasure that the UNITED STATES MILLER acknowledges the receipt of the letter below, and gives it to its thousands of readers in the milling trade.]

To the Editor of the United States Miller:

SIR: Acknowledging the receipt of the May number of the MILLER, it affords me pleasure to state that I have placed it in the hands of several English millers, who speak in high terms of its excellence as a millers' journal.

The article commending the establishment of "a high standard of flour" is wise and timely, and should lead to valuable results.

Our American farm products have a comparatively low standard in this country, simply because proper care and skill are not always shown in grading the various articles of food sent to this market.

First-class products are always sure of finding an excellent market here, in time; but, in order to promptly secure a first-class reputation, better methods are urgently required for placing our farm products on sale in Great Britain.

There can be no doubt about the wisdom of the proposal to secure a uniform grade of flour

of a high standard, and such a course would undoubtedly lead to better prices being secured here. When the "grade" is often uncertain, and at times misleading, it is not strange that foreign dealers become suspicious, and, as a result of this lack of confidence, "top prices" are not as often obtained as they should be.

Two things are necessary in order that the best prices for our food supplies may always be obtained here: First, uniform excellence in quality; and second, a first-class reputation.

These are of about equal importance; and every movement having for its object the securing of a higher and uniform standard for our products is a step, and a very important one, in the right direction. What is true of our flour, holds good with everything sent to this market from our country. There has been too much "chancing it" in the past—in sending over here poor stuff—and such a course has had its influence in making dealers doubt the average honesty of average shipments.

To remove this feeling, it is necessary for shippers and producers to combine in the way suggested in the article you reproduced from a contemporary; and I am glad to note the action taken.

I take great interest in this subject, as you will see from my annual report to the Department of State—a copy of which I send you.

Very truly yours, ALBERT D. SHAW.

New Publications.

HALL'S JOURNAL OF HEALTH. Published at 141 Eighth street, New York. Subscription price, \$3 per year.

This magazine is full of common-sense suggestions, written in a plain and pleasing manner. Every family should have and read this magazine and heed its advice. At the end of the year they will find themselves healthier, happier, and wiser, and probably wealthier.

Things Worth Knowing.

ANALYSES OF OATS.—The following are the summarized results of 120 analyses of different kinds of oats, performed by Messrs. Grandean and Leclerc:

	Maxi- mum.	Mini- mum.	Mean of 120 an- alyses.
Water.....	15.50	8.50	12.01
Protein.....	12.45	7.15	9.80
Carbohydrates, principally starch.....	64.65	48.60	59.69
Fat.....	7.13	2.77	4.58
Husk and fibre.....	14.89	6.73	11.20
Ash.....	6.14	2.56	8.32

PAPER BELTING.—It is reported in Engineering that paper belting is successfully used in the machinery-hall of an exhibition now being held in Japan. The Japanese have long been celebrated for their manufacture of some exceedingly tough descriptions of paper, and it is stated that the paper belting has been tested and found much stronger than ordinary leather. Now that machinery is rapidly making its way into Japan, the manufacture of this paper belting is of special interest to the country, as, from the want of proper tanning, good leather is not made by the Japanese.

THE recent discovery that cotton-seed oil is a perfect and satisfactory substitute for lard bids fair to create quite a revolution in household economy. Col. O. O. Nelson, of Huntsville, Ala., says he has repeatedly used the oil at his house, and finds it equal to the best article of lard. Last week a hotel-keeper at Memphis published a statement to the same effect. It has been tried by several citizens of Tusculum, Ala., who say they can discover no difference between the oil and the lard. As the refined oil is only about one-half the cost of lard, there is bound to be a great tumble in the price of the latter before long.

IN the annual report of the Minneapolis Board of Trade for 1880, attention is called to the fact that actual sales of spot wheat at that city are greater there than at either Chicago or Milwaukee. In view of this, the Board realizes that at an early day it, or some kindred organization, will be called upon to furnish facilities to bring buyers and sellers together, and to furnish the means for the transaction of the bulk of the produce business. To this end more elevator room will be required. When the elevators now being built at Minneapolis are completed, the storage capacity, outside of the mills, will be about 1,800,000 bushels, and, with the mills, 2,000,000 bushels. It is added that room for the storage of another million and one-half bushels becomes a necessity before any attempt can be successfully made to make Minneapolis an open market. The "little giant" city of the Northwest, it thus appears, is maintaining its reputation for keeping abreast of the times. The report, as a whole, is indicative of marked commercial prosperity.—Bradstreet's.

SUBSCRIBE for the UNITED STATES MILLER. Only \$1 per year.

SCRATCHED ROLLS.

WRITTEN FOR THE UNITED STATES MILLER BY
HOLMOPHILOS.

In the June issue of the UNITED STATES MILLER I have clearly and exhaustively demonstrated my views about sharp tools in general and sharp stones, sharp corrugated and porcelain rolls in particular. The sharper the tools, the better the work produced with them. In flouring fine purified middlings, the most circumspect and successful millers use porcelain rolls with great advantage over stones and smooth iron rolls. But there are other millers enough in this country, as well as in Europe, that believe the latter work best in flouring. My opinion is, that, as much as the smooth iron rolls are in their places for sizing coarse middlings, as little they are fit for grinding fine middlings. They are the *non plus ultra* of dullness on account of their being almost mathematically true cylinders and thus perfectly smooth and even. One can not feel a "tooth," a grit-spot on any point of the grinding surface of such roll, and yet some employ them for grinding. All they are fit for is to *squeeze* with. Paper, cotton-seed, oil-seeds, coarse middlings and chit may be squeezed flat with them; for that purpose no differential motion is required. If the rolls, intended for flouring fine middlings did not run differentially, the middlings of course could be reduced to flour; an old boot may be pulverized, smashed to powder—if passed through a pair of smooth iron rolls sufficiently set together. But how would the flour and unreduced returns leave the rolls? It would pass off in the shape of cakes which would bolt uneconomically, as the reel would naturally throw off rich tailings, containing a considerable quantity of flour. The greater part of the flour produced by the squeezing action would be flour-powder, it would show white but feel soft, and have little water absorbing and retaining propensities. In order to prohibit the caking in a measure, the smooth iron rolls have to revolve with considerable differential speed, thus the cakes are reduced in size, yet still the flour produced is soft, because of its being made by squeezing, and the rolls will deliver the crushed matter at a higher temperature, which is also objectionable. This inconvenience grows of course with the pressure the rolls have to be set together with, to do their work. Dynamoelectrical experiments have proved that it takes almost twice the pressure to reduce the middlings to flour by squeezing than by cutting. The rolls will smoothly glide by each other and heat and cake the stuff entered between them, which trouble will increase the more the rolls are taxed and the softer the wheat is of which those middlings are obtained, which are to be floured by the smooth iron rolls. The cakes may easily be broken and atomized for better bolting by a detacher, a machine with which 75 per cent of all smooth iron rolls are provided in Europe. Taking together the results, if fine middlings are to be floured by smooth iron rolls, the following inconveniences can easily be noticed: the flour obtained is soft, it lacks the rich hue and sharp feeling, which are both so desirable, the power is increased owing to the greater pressure necessitated, and the driving of a detaching machine for the purpose of freer bolting; the wear in bearings rises in the same proportion as the pressure.

Some roller-maker in Europe introduced four or five years ago sharp-ground iron rolls, that is, the polish of the rolls was removed by adzing chemicals. The rolls—as I read in European milling papers—worked better than the polished ones, the flour was cut into sizes, caking was obviated and detachers made useless during the first weeks of their employment. Then, as the indentations were but microscopically small, the grain tooth was soon worn off and the trouble of polished rolls began to be felt more and more.

Some immigrated Hungarian millers told me that in some mills the iron rolls were from time to time scratched by corundum stones, and some roller-mill manufacturers cut very fine saw-tooth corrugations into the grinding surface of the smooth iron rolls. But, owing to the necessity of their working so close together and having so small teeth, the sharp edges soon got dull and the rolls lost their grip. In one word, the scratched rolls were unreliable for any length of time; they could not be trusted to work well six months. It is my opinion that the scratched rolls, even after being moderately dull, will work better on flouring fine middlings than the polished rolls. It seems not strange, when scratched iron rolls are introduced in this country, when porcelain rolls are 8 to 10 per cent. dearer than

iron rolls owing to import taxes; they simply are a cheaper substitute for unglazed or biscuit-porcelain. But when all the same efforts of producing sharp smooth iron rolls could be made several years ago in Europe, where the porcelain rolls are five to eight per cent. cheaper than the iron rolls, it invites the skeptical miller to reflect and find the reason of this. The porcelain shells of years ago were fastened on shafts by sulphur cast in. When bearings got hot they expanded, and often burst the shell, thereby causing quite a loss of time, and involving expenses for repairs. Often the shells got loose—and thus they broke subsequently. The millers became afraid to buy them, and preferred rather to buy the dearer iron rolls than porcelain. To-day there are but few scratched or adzed iron rolls bought and used across the ocean, the millers prefer to use the polished ones in connection with a detacher, generally fixed below rolls in machine frame or the porcelain rolls with shells held by friction-flanges. Fr. Wegmann, in Zurich, Switzerland, the inventor of the porcelain rolls, really the originator of the whole roller movement, never turned out so many porcelain roller mills as he has done during the last year. His business is increasing every day. I heard from a man coming from his place that he has nearly 1,000 men in his employ. The miller buying a porcelain roller mill for the flouring of his fine middlings need not any more be afraid of breakage of shells.

For two years E. P. Allis & Co. have been Fr. Wegmann's sole agents in this country, and have had in that time only two broken shells to replace, amongst all the porcelain rolls they manufactured. The biscuit-porcelain is a very hard mass of even texture and hardness; no matter if they are worn off half an inch all around, they are just as hard and as sharp as when new. The rolls are first turned as true as possible by diamond and then ground perfect by an emery-wheel traversing constantly from one end to the other all the length of the roll. And, after the roll body is ground two or three hours by this wheel, it shines, but feel them and you will notice the grit at once. Porcelain rolls will cut the middlings into flour; of course a certain degree of pressure is needed to effect the cutting—one cannot cut a piece of paper with even the sharpest knife unless he presses it against it. The meal delivered is loose and cool; it bolts easily, and the flour has a sharp feeling and a rich hue.

I say emphatically, no medium can supersede the porcelain for the purpose of grinding fine middlings to flour, keeping sharp as long, or doing the work as well and as easy. Glass has been tried; porphyry, granite, hard sandstone, rolls made of emery flour, adzed or scratched chilled iron rolls; and none of them could replace the porcelain.

It is a natural consequence, that if one man invented some new device or material and makes money by it, hundred of others are figuring eagerly to get up something better to beat him out of his gold mine or help him mining, and no invention has been waylaid more than the invention of the eminent fitness of porcelain for flouring middlings to sharp, rich flour.

HOLMOPHILOS.

ROLLER MILLING.

WHICH KIND IS THE BEST?

A Subscriber for the UNITED STATES MILLER
Recites Some of His Experience.

OTHERS WILL NO DOUBT FIND IT WORTH READING, FOR, THEY TOO, HAVE BEEN
PUZZLED ON THE SUBJECT.

Editor United States Miller:

I have read so much in the various milling journals on the subject of milling improvements of late that I have almost begun to become indifferent on the subject. Mr. Snobelsby makes a great discovery and announces it in one paper, and Mr. Bobelsby in another paper sneers at it and tries all he can to ridicule the matter, often in an open-faced (farced) manner.

Of late, especially, a struggle has ensued between the advocates of dull and sharp corrugated rolls for the reduction of wheat to flour. One says, so it must be—another that it *must* be just the reverse, and I made up my mind that millers were being played the fool with by the different salesmen for roller mills and that our time was being raided upon by them solely for their own benefit. I was disgusted, and made up my mind to study the objects of dispute *in natura*.

I assure you, Mr. Editor, it is easy to believe a thing to be good when we see it. I determined

to qualify myself to laugh at the erudite efforts and explanations of one party at least. I longed to simplify the confusion in my mental horizon by a journey to the universities of the milling industry, and started for Minneapolis first, thence I went to Milwaukee, and then home again via Chicago, necessarily so, for I can hardly visit my neighbor unless I go by way of Chicago.

Thank God! I have returned. I have stood firm against all attacks on my ordering capacity and bank credits. I have frolicked with the sharp roller men and laughed with them about the stupid ideas of the dull roller advocates. I have roguishly made fun when with the dull roller agents of the sharp roller fellows—"the idea of using a circular saw to saw the wheat in two" you know.

And now here I am at my old dusty desk and that will be the only thing that will not be rebuilt. All the rest will be changed, and what kind of rolls will I put in? That is my secret. I will not tell you now. Excuse me and oblige by reading further, and do not now consign my communication towards your paper basket—that hyena bound in ratan. Before me, on my venerable desk, lies a legion of papers dressed in all the hues of the rainbow,—a collection of amassed capital of brain and cash. Let me go through them like a dose of Attie salts!

The *Northwestern Miller*, of June 8th, I take up first. By looking through its columns I find an article treated "A Puff for Stevens Rolls," signed "A Subscriber." Alas, here is another murderous assault on the sharp rolls, with the intent of beheading them! This amused me greatly, as it sounded exactly the same as several other articles that I noticed in that same valuable missionary of science and education, signed by other names, all of course, judging by the happy similarity of character, written by the same party directly connected with the dull Stevens rolls. He notices the fact that the well known firm of E. A. Pillsbury & Co. has ordered 40 sets of 9x30 corrugated rolls with dull corrugations, and takes it for positive proof that, because of the order, they are the best rolls. Mr. Editor, allow me to criticize this a little for the benefit of my fellow craftsmen. With all due respect to E. A. Pillsbury & Co.—for I agree with the said "subscriber" that they are successful millers—I would say to Mr. S., that E. A. Pillsbury & Co. have no mill running with Stevens rolls at present; they have rebuilt one of their old mills and put them in, but are just starting, therefore they know nothing of the results. It is evident that it is only E. A. Pillsbury & Co.'s opinion that the Stevens corrugations are the best, that caused them to make their purchase and—are they not liable to mistakes like other men and millers? Your humble servant would think at least that their judgment was a little faulty in putting in rolls 30 inches long, no matter what corrugations are on the rolls. But I find no fault with the well known firm spending their money as they please.

Mr. Subscriber may be too far gone in his admiration of the Stevens rolls—so far, that he is utterly impotent to notice things around him. God bless him! he may be so much absorbed in the efforts of procuring large commissions for the sales of those rolls that he must "keep mum" about the success of other rolls in use; God forgive him!

But let me stir him up and call his attention to what other mills, just as large as E. A. Pillsbury & Co.'s other millers just as successful as the Pillsburys, to say the least, are doing with sharp corrugated rolls. Those men would not use a Stevens roll, even if they got it for nothing. Their flour sells for as much money as any of the best flours in the United States, and if Mr. S. would look around in his own city and State he would notice that the best mills, with few exceptions, are using the sharp rolls and are putting in more all the time. That is what I, as a stranger, noticed during my short stop at Minneapolis.

When at Milwaukee I went to the office of Allis & Co.'s, and asked for a permit to see the shops. One of their 19 draughtsmen was ordered to accompany me and explain what I wished to know. I must herewith give credit to the firm for their courtesy to a stranger. I found in their roller shops an immense number of roller mills in all stages of perfection. The foreman showed me a handsome list of orders for Gray's noiseless roller mills in his book, which were not checked off "sent;" their number was about four hundred (400). The foreman complained of not being able to fill those orders fast enough, saying he could not make more than 6 rolls per 24 hours, and the firm demanded 8. The shops are working night and day, of course,

and yet more orders come in per week than can be filled in the same time. I was puzzled about the increase of the roller-mill movement; I never would have believed this unless I saw it, Mr. Editor.

I heard that 75 of these four-roller mills were ordered by the Winona Mill Co., 40 were to go to Hecker & Co., New York City, to take the place of Stevens' dull rolls in their Metropolitan mill; Gibson & Co., Indianapolis, ordered the rolls necessary to complete their mill which they are just rebuilding. They are confident that the softer the wheat, the sharper the rolls must be to produce little break flour and the greatest possible quantity of coarse middlings. I could name you a great many more renowned firms that I saw written down as customers in the order-book of Allis & Co. In looking through the mills of Milwaukee, I found in Sanderson's rebuilt mill, also in Kern's old and new mills, as far as I was allowed to proceed, i. e. to grinding floor, none but Gray's sharp corrugated rolls on wheat reductions, smooth iron rolls on coarse middlings, and porcelain rolls on the flouring of fine purified middlings. The new mill of Mr. Kern represents a solid exterior, and what I saw of the inside work was substantial, correct to the dot, nothing shoddy or gaudy.

In Chicago, I found the head-miller of the Star and Crescent Mills, Mr. Funk, busily engaged starting the rebuilt mill, assisted by Mr. Wm. Fuist, Allis & Co.'s Hungarian miller, a miller *par excellence*! Also, there I saw Gray's sharp rolls used exclusively. The more successful millers I saw using this kind of rolls, the more I became convinced that the flour manufacture in economical regards, demands sharp grinding contrivances, and that my fellow-craftsmen cannot be too careful in selecting the right kind of machines, fit to accomplish a speedy return of their outlaid wealth.

I must stop here. I hope I do not find amongst the other papers another article of deceptive habits, in but case I do, I will pick up the pen and write again. (Throw out that paper basket, Mr. Editor.)

And my Mr. Subscriber of the *Northwestern Miller* would do better if he passes his judgment after having traveled like me, with eyes ajar, to see more of the milling world; having investigated the flour market skeptically, he then on return would be fairly ashamed of his "puff" for the Stevens rolls. He would indeed be absolutely persuaded that the Stevens dull rolls have no thunder to spare.

A SUBSCRIBER,
and, beg your pardon—a MILLER, too.

MR. GEORGE SMITH, of the firm of Smith Brothers, millwrights, of Milwaukee, will leave for San Francisco, Cal., July 7th, and will establish there a general flour mill building and mill-furnishing establishment. Mr. Smith has spent most of the past year in California in which time he has superintended the building and reconstruction of several flour mills, and he has been strongly urged to establish there permanently. We wish him success in his new departure.

(For the UNITED STATES MILLER.)

Review of the Markets.

MILWAUKEE, July 1, 1881.

The stimulating influences which have prevailed of late in the wheat market, seem to have had their full effect, for the present, and the general feeling is rather in favor of a little re-action. With the large deficiency in the crop of this country, which is now apparent, as compared with the previous one, prices must rule materially higher than last season, unless European crops should prove to be correspondingly larger. It is hardly to be expected that the full deficiency will be made up but a good crop in Russia, which now looks probable, will contribute largely towards it, and both France and Great Britain promise better now than last year.

Free deliveries have been made to-day on July contracts, and the cash wheat both here and at Chicago has gone into the hands of parties representing Armour & Co., who have been credited with manipulating these markets for the past two months. Receipts are now likely to be very light, until the new crop begins to move. Our advices in regard to crop prospects in the Northwest vary considerably, but none are very sanguine.

We quote the market closing on noon 'Change to-day at \$1.11 for No. 2 cash or July, \$1.12 for August, and \$1.10 for September. The latter delivery seems to be the favorite, and transactions are about equally divided between the two months. Cash wheat is in very little demand, and shipments that are being made are almost wholly on the account of operators previously referred to.

E. P. BACON & Co.,
Commission Merchants.

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

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SUBSCRIBE for the U. S. MILLER.

THE New York Legislature has passed a bill taxing brokers in proportion to their sales. Gov. Cornell has not yet signed the bill, and it is believed that he will veto it.

THE average yield of wheat from the Domain lands (the best in the country) in Egypt for 1880 was 15 bushels per acre. These lands are irrigated at great expense.

PARTIES desiring to secure the location in their town of a miller with a flour mill of 100 barrels daily capacity, will find it to their advantage to address E. P. Pierce, Hutchinson, Kansas.

THE largest elevator in the world is about completed. It is located in Brooklyn, N. Y., cost \$2,000,000, and will hold 2,500,000 bushels of wheat. From 7 to 10 ocean steamers can be loaded from it at one time.

VENEZUELA, South America, during the year 1878 imported over a million dollars' worth of food supplies, a large proportion of which was flour. Since then the trade has been increasing. The principal exports are coffee, cacao, and cash.

THE Supreme Court of New York has granted the order to change the name of the corporation of "Scribner & Co." to "The Century Co."—the order to take effect on the 21st of June. The July issues of *Scribner's Monthly* and *St. Nicholas* will have the new corporate imprint.

WE are always pleased to receive from our milling friends copies of their local papers. We would suggest to the senders that if there is anything especially of interest to the trade in the paper sent, that they should mark the item with pencil or pen so that it will not escape our notice.

H. J. WINNER, U. S. Consul at Sonneburg, Germany, says that the principal causes of the large emigration from Germany are: "The general discontent among the working classes at their condition—the shape which the internal affairs of the country have assumed, and the constantly increasing burdens of taxation for military and other purposes.

AT the June term of the U. S. Circuit Court for the district of Minnesota, the case of the Consolidated Middlings Purifier Co. against A. H. Kirk, manufacturer of middlings purifiers at Minneapolis, Minn., for infringement of patents, was decided in favor of the complainant, a decree entered in their favor and a perpetual injunction granted restraining Kirk from manufacturing the purifier in question.

MR. S. N. STEWART, a Philadelphia civil engineer and inventor, has in person succeeded in introducing his current water-wheel in the Danube river close to Vienna. Messrs. Escher, Wyas & Co. have undertaken to manufacture the wheels, and there is a great demand for them. Swift flowing streams are numerous in Austria, Germany and Switzerland, and the current water-wheel is especially adapted for use in such streams.

EXPORT TRADE.—We would respectfully call the attention of those of our readers who are exporting, or would like to export, flour to foreign countries, to the advertisements of European grain and flour importers, which appear elsewhere in our columns. We do not doubt but correspondence with them will lead to future transactions which will redound to the mutual benefit of both exporter and importer.

WE would call the attention of our readers to Mr. Max Hauser's announcement in another column. Mr. Hauser is a brother of our well-known Milwaukee jeweler, Mr. Adolph Hauser, and it was at his solicitation that he came to America to locate permanently. Vienna is celebrated as being the great centre for the manufacture of optical instruments and Mr. Hauser was known there as one of the best practical opticians in the trade. Persons suffering from bad eyes, or defective glasses, should consult him. The editor has no hesitation in recommending him to the public.

CAUTION TO MILLERS.—Not long since in the case of Oliphant vs. The Salem Flouring Mills Co. in the U. S. Court for Oregon, Judge Deady held that "the act of branding flour 'Patent' was a violation of the law even though the machinery with which the flour was made was patented." It is possible for some one to make millers much trouble for breaking the law in this respect. There is scarcely a mill in this country that does not brand some of its flour "Patent." It is difficult to break up a practice which is now so universal, but it ought to be done at once.

IN a letter received recently from Henry Gates, Esq., of the firm of Jones & Gates, owners of the Roseburg Flour Mills at Roseburg, Oregon, he says: "As to wheat prospects—they were never more favorable than now. We are having rains now (June 11) that have changed the appearance of two weeks ago, at least 50 per cent for the better. Our farmers are jubilant over the prospects, and the advance in the price of wool of 5 cents per pound is quite an item of interest in this country, considering the fact that there are over 80,000 sheep in this country."

"OFFICIAL" MILLING JOURNALS.—In view of the criticisms of the Millers' National Association by several milling journals now, it is not a little amusing to look back over our files of such journals for a couple of years and see with what ardor each milling journal claimed to be THE official organ of that august body, and really they all were official organs. The Association at one time passed a resolution to the effect that all milling journals in the United States should be considered official organs that published the proceedings of the National Association. We believe that all the milling papers but one have dropped the legend.

ONE of our faithful contributors has gone amongst the old Greeks to borrow a name. He is a scholar and rather polyglot, has read the Greek classics, so he chose the name "Holmophilos" for "nom de plume," which in plain English means Roller-friend. Whatever his intentions may be to conceal his real name, having appeared often enough in our columns, we honor them, and wish Mr. Holmophilos may give us many more products of his able pen on milling subjects, civil and mechanical engineering. He is welcome under any name. This we can tell our readers, that he is a bona fide civil engineer who thanks for the development of his mill-building capacities, the careful instructions of the most successful milling engineer of this country, who, on the other hand, is an adopted son of this Republic and is as patriotic in his views and manners as any of our natives can be.

DENCHFIELD.

That is the Name of a Patent which Interests Millers at this Time.

Names of Parties in Minneapolis and Milwaukee Recently Sued in the U. S. Circuit Courts.

NOTES REGARDING THE MATTER WHICH MAY PROVE OF INTEREST TO THE READERS OF THE "UNITED STATES MILLER."

It was pretty generally believed by millers that all the patent cases of interest to the fraternity would be disposed of in one way or other by the Millers' National Association at their recent meeting in Chicago. The Cochrane case was settled to the satisfaction of members of the Association and to the disgust freely expressed of those outside of that organization, and no little mud has already been thrown at the Executive Committee of that body. The Association concluded that compromise on the ground of "policy"—that it was cheaper to settle than to fight.

Strange as it may seem, however, no particular effort, so far as the public are informed, was made to settle the claims for infringement of the Denchfield Patent; claims that have been before the milling public for several years, and which the complainants have succeeded in having sustained by the courts in every instance thus far. The matter was left in the hands of the sub-Executive Committee to be adjusted, and it seems to be the opinion, so far as we are able to state, that they will continue a fight, the results of which so far have been uniformly in favor of the complainants. The wisdom of contesting the claims further, after so many adverse decisions, is perhaps open to criticism, and in view of the Cochrane compromise it might be also a good plan to follow the dictates of "policy" in this case. We will now proceed to give a short sketch of the history of the Denchfield Patent, which we believe may interest many of our readers.

April 20, 1858, one John Denchfield, of Oswego, N. Y., obtained a Patent No. 19,984 for "a certain new and useful improvement in cooling and drying meal," securing to him all rights under said patent for the term of 14 years.

On account of a defective or insufficient specification of the Letters Patent No. 19,984 were subsequently surrendered as provided for by law and re-issued Letters Patent No. 41,712 were issued January 16th, 1872.

The Commissioner of Patents on the 17th of April, 1872, for cause, extended the re-issued Letters Patent for seven years, so that the patent did not expire until April, 1879.

These Letters Patent were duly assigned to Lemuel W. Bignall of Syracuse, N. Y., and the actions now pending are brought by him.

The Denchfield patent consists in the peculiar arrangement of a Suction-fan, Conveyor or Conveyors, Suction-spout and Elevators, by means of which the meal is subjected to the action of a current of cool air in its passage from the grinding stones to the bolting reels, cooling and drying it in a simple and economical manner. It is commonly called a "Sucker."

In 1874 the complainant brought ten suits for infringement against New York millers. Two of these cases were made test cases and were brought to a final hearing on pleadings and proofs in March, 1876, in the U. S. Circuit Court for the Northern District of New York, at Utica, Hon. Alexander S. Johnson being the presiding Judge. In September, 1877, the Court made and filed its decision sustaining the validity of the re-issued Letters Patent, declaring that John Denchfield was the first and original inventor of the improvement in cooling and drying meal.

The Court granted a perpetual injunction against defendants, restraining them from using said patented invention, and referred the question of profits and damages to Ward Hunt, Jr., of Utica, N. Y., one of the Masters in said Court for examination and decision.

On the 4th of March, 1878, the Master reported to the Court that the damages and profits were equal in value to one barrel of flour for every 600 made in the mill where the patented improvement was used. The defendants excepted to this finding, and June 6, 1878, the exceptions were argued before Hon. Wm. J. Wallace at an adjourned term of the U. S. Circuit Court. August 1st, 1878, the Court rendered its decision, overruling the exceptions and sustaining the Master's report, and on the 3d day of December, 1878, judgment was duly docketed against Wm. G. Gage et al., for damages, profits, interest and costs, for the sum of \$3,279.84, of which sum \$1,950 was for costs, and \$168 for interest. The de-

fendants appealed from this decision to the Supreme Court of the United States where the case is now pending.

After the decision against Gage, the defendants in seven other cases applied to the Circuit Court, Judge Wallace presiding, for leave to amend their answers, alleging a number of other letters patent and devices which were claimed to anticipate the Denchfield device.

The Court allowed the answers to be amended by alleging as an anticipation the French patent known as the Vallo device. The cases came on for a hearing June 5th, 1878, but the defendants failed to make their appearance, and decrees were entered in favor of the complainants; the question of damages, profits, etc., referred to the Master and perpetual injunctions granted. In July following the defendants applied to the Court to open said defaults, but the Court refused and pronounced the decrees final. Seven new suits were then begun against New York millers, three of whom were members of the New York Miller's Association. The cases were tried before Judge Blatchford, and the defendants were represented by Hon. George Harding and Geo. B. Selden, Esq. The Court decided that the defendants in three cases, being members of the Millers' Association, were estopped from making further defense and decreed accordingly. In the other four cases decrees were filed in favor of complainant.

The matter at the present time stands as follows: All the cases tried in the Circuit Courts of the United States have been decided in favor of the complainants. The case of Gage is now on appeal before the Supreme Court of the United States.

Suits have recently been commenced against the following parties in Minneapolis, St. Paul and Milwaukee:

Pillsbury, Crocker & Fisk, Minneapolis.
Day, Rollins & Co., "
Crosswell & Syme, "
Washburn, Day & Co., "
Leonard Day & Co., "
Russell, Hine & Co., "
Gardner & Barber, "
Noble, Schober & Co., "
W. F. Cahill & Co., "
W. H. Hinkle & Co., "
D. R. Barber & Son, "
Stamwitz & Schober, "
Bull, Newton & Co., "
Hinkle, Greenleaf & Co., "
Pettit, Robinson & Co., "
J. A. Christian & Co., "
Chas. A. Pillsbury & Co., "
Beedy, Huy & Co., "
S. S. Brown & Co., "
Tiffany & Dunwoody, "
Hobart, Shuler & Co., "
Geo. H. Christian & Co., "
Washburn, Crosby & Co., "
Archibald & Schurmeir, St. Paul.
Wm. Lindeke, "
H. Nunnemacher & Co., Milwaukee.
Chas. Manegold, "
Jno. B. A. Kern, "
Seamans & Stevens, "
Wm. C. Durant, "
E. Sanderson & Co., "
Wm. H. Jacobs, "
Gerlach & Dittmarsch, "
Joseph Metzel, "
Hayden & McLaren, "

All members of the Association are estopped by Judge Blatchford's decision from making defense in his Court at least.

The defendants in all of the last cases commenced, we are informed, are making every preparation possible for a strong legal contest, and in the end "we shall see what we see." The claims, if finally fully sustained, will take more than one million dollars from the pockets of American millers, and if we may judge by the report of the New York Master, the device has been worth it to the milling interest of this country.

WM. DERWENT'S patent for a double conveyor under bolting reels, etc., issued March 19th, 1867, is now being brought before the milling public. It is claimed that the device was in use previous to the issuing of the patent. Millers are being served with circulars offering terms of settlement, supplemented by threats of suits in case of non-settlement. Now the Denchfield patent—next the Derwent—then Chisholm's Motley patent—say, where is this thing going to stop? In view of these things would it not be well to brace up and keep the National Association in vigorous existence? No one man can afford to investigate these claims and satisfy himself whether he is justly bound to pay these claims or not, and surely no one man can afford to fight any powerful combination of patent-right owners who have invested in a patent or patents as a speculation. Some papers and millers have accused the late Convention of selling out, but so far as we have observed we cannot see that they have done anything that they had not a perfect right to do.

MILLERS' NATIONAL ASSOCIATION.

Eighth Annual Meeting.

MINUTES OF MEETING HELD BY THE EXECUTIVE COMMITTEE OF THE MILLERS' NATIONAL ASSOCIATION AT THE GRAND PACIFIC HOTEL, CHICAGO, JUNE 6, 1881.

The meeting was called to order at 2.30 p. m., by J. A. Christian, Chairman, and on calling the roll the following named members were found present: George Bain, of St. Louis, President; Loren Fletcher, of Minneapolis, Vice-President; J. A. Christian, of Minnesota, Chairman; S. H. Seamans, of Wisconsin; Alex. H. Smith, of Missouri; Charles H. Seybt, of Illinois; J. A. Hinds, of New York; Homer Baldwin, of Ohio; P. H. Magill, of Maryland; W. P. Brown, President Minnesota Association.

Mr. C. H. Seybt stated that in connection with President Bain and Alex. Smith, member of the Executive Committee from Missouri, they had met Mr. Knickerbocker, the Secretary of the Consolidated Middlings Purifier Company, and after careful consideration and much earnest discussion had made an agreement with him subject to ratification by the Association at this convention, for a full and complete settlement of all suits now pending against members of the Millers' National Association, and releasing them from any and all liability for infringement of what is commonly known as the Cochrane Claims.

President Bain said that, by way of explanation he wished to state that the above arrangement was entertained, not because he was not just as well satisfied as he had always been, that the Cochrane re-issues were fraud from the beginning, but merely a matter of business policy. The matter would probably remain some two or three years before the Supreme Court, but it would come to trial, during which time we must continue to retain first-class talent to keep watch of it and defend it, and at considerable expense to the Association. Then it would cost us a large sum to argue it, making a total cost of, say, twenty thousand dollars to the Association. Now if we can save this large outlay, and at the same time all the trouble and annoyance that it would be to us for a nominal sum, to say nothing of the slight chances in law that the outcome might be against us of say one chance in a thousand, or one chance in ten thousand if you please, it would seem to be simply business policy and justice to ourselves to do so.

Mr. Seamans thought that there was no special necessity of retaining expensive talent at so great a cost to defend the suit; and that it might be done for about the same or perhaps even less money than it would cost to settle it. He had started out in this fight believing it to be a fraud, and was in favor of fighting it to the end.

Mr. Brown said that in his opinion, it was simply a question, as to whether we would pay a nominal sum to settle up and put out of our way an annoying case, even though we believed the claim to be unjust, or pay \$20,000 or \$25,000 to defend it, with perhaps one chance in a thousand of its going against us.

After considerable further discussion, participated in by nearly all present, a motion was made by Homer Baldwin, seconded by J. A. Hinds, that the agreement made by Messrs. Bain, Smith and Seybt, with C. R. Knickerbocker, representing the Consolidated Middlings Purifier Company, be approved by this committee and recommended for ratification by the convention to-morrow, and that the ayes and noes be called.

On calling the roll the following named gentlemen voted aye:

J. A. Christian, Charles H. Seybt, Homer Baldwin, W. P. Brown, Alex. H. Smith, J. A. Hinds, P. H. Magill, Loren Fletcher.

No—S. H. Seamans.

Motion was made by Mr. Bain, duly seconded, that the names of all delinquent members whose arrears shall not be paid into the National Treasury within sixty days from this date, shall be stricken from the roll of membership, and that the Secretary is hereby instructed to so notify them. Unanimously adopted.

On motion of Mr. Bain it was resolved that hereafter no miller shall be admitted to membership in the National Association, unless by a majority vote of the sub-Executive Committee, and that each State Association be notified of this decision, and that all members hereafter admitted in the State Associations would be admitted to the National Association only on the approval of the said committee. Also that the sub-Executive Committee shall

have power to prescribe in each individual case the amount that such applicant shall pay as initiation fee. In cases where the Secretaries of the State Associations shall neglect to report or omit for any cause the name of any member of the National Association from his State, it shall be the duty of the Secretary of the National Association to notify such member individually of such omission, and that his name will be stricken from the roll, unless his arrears are paid and his name so reported within fifteen days. Adopted.

The subject of rating mills in future assessments by their daily capacity instead of by the number of burrs, on account of the great change in milling machinery since the organization of the Association, was then taken up and discussed at considerable length, resulting in the adoption of the following resolution offered by Mr. Seybt:

Resolved, That under section four of the Constitution, members shall be assessed hereafter not upon the number of burrs or their equivalent contained in their mills, but upon their grinding capacity in the following ratio: Each thirty-five (35) barrels of flour of the daily output shall be the equivalent of a run of stone for the purposes of assessment of this Association.

The Denchfield matter was then taken up and discussed by the committee. Mr. Seybt, of Illinois, and Mr. Hinds, of New York, making a verbal report of the condition of the suits on account of these patents in their respective States. Letters were read by the Secretary from Mr. Harding and Mr. Gridley, to the chairman of the committee on the validity of their claims, and the proper course in their opinion, for the Association to take. Mr. Christian stated that Mr. Gridley would meet the committee at 8.30 to-morrow morning, to which time an adjournment was taken.

Adjourned meeting of the Executive Committee held June 7, at room 9, at 9 o'clock A. M., J. A. Christian in the chair.

Present—W. P. Brown, Minnesota; P. H. Magill, Baltimore; Alex. H. Smith, St. Louis; J. A. Hinds, New York; S. H. Seamans, Wisconsin; W. S. Green, Wisconsin; Homer Baldwin, Ohio.

Minutes of the former meeting read and discussed. Mr. Gridley, attorney for Wisconsin and Illinois Associations, being present, the Denchfield cases were taken up for discussion. Mr. C. H. Seybt, after explaining the present status of the cases and the correspondence that had passed between himself and the representatives of the Denchfield cases was followed by Mr. Gridley who proceeded to state his opinion and ideas with regard to defending these suits at full length, after which the following resolutions were offered by Mr. Smith, of St. Louis, seconded by Mr. Baldwin, of Ohio:

"That the matter of defense, or settlement of the Denchfield patent be left to the sub-Executive Committee, for them to take such action as they may deem advisable for the interest of the Association.

"And further resolved, that the foregoing resolution be recommended to the Association for their adoption."

Unanimously approved.

On motion of Mr. Smith, the committee then adjourned.

CHICAGO, Ill., June 7, 1881.

The Association was called to order promptly at 11 A. M., President Bain in the chair.

The following members were present:

MINNESOTA—J. A. Christian, Loren Fletcher, W. F. Cahill, Frank Hinkle, F. L. Greenleaf, Minneapolis; E. L. Baker, W. P. Brown, Red Wing; J. Ames, Northfield; R. Gregg, Cannon Falls.

WISCONSIN—S. H. Seamans, Milwaukee; W. Green, Milford; Charles Manegold, Milwaukee.

ILLINOIS—Chas. H. Seybt, Highland; H. S. Osborn, Quincy; H. L. Halliday, Cairo; C. Eisenmeyer, Trenton; Geo. Postel, Muscatine; D. R. Sparks, Alton; H. R. Whitmore, Quincy; W. T. Crow, Cotton Hill; F. Woodward, Stanton; C. B. Cole, Chester; E. C. Kreider, Jacksonville.

INDIANA—Nic. Elles, Evansville; Jos. Pollock, Vincennes.

MISSOURI—Geo. Bain, St. Louis; Alex. H. Smith, St. Louis; W. Pollock, Mexico; David Kirk, St. Louis; J. F. Lawton, Carrollton; W. H. Wagner, Hackman, Independence.

NEW YORK—J. A. Hinds, Rochester; Henry Rhodes, Ogdensburg; Geo. Wilson, Rochester; W. W. Hartwell, Albany; Geo. Motley, Rochester; — Chester, Buffalo.

OHIO—Holmer Baldwin, Youngstown.

KANSAS—O. W. Baldwin, Ottawa; B. E. Langdon, Fort Scott; — Childs, Abilene.

MARYLAND—P. A. Magill, Baltimore.

MICHIGAN—Wm. Hayden, Tecumseh.

The President then spoke as follows:

After the experience we had at Cincinnati, with the consent of the Executive Committee I issued this call for a delegate convention. The matters that have come before us in the past having gone out of sight. This meeting is called for the transaction of business. The Executive Committee have entered into some contracts that will be laid before you for your approval, and we have some suggestions to make in regard to the future business of the Association. As my friend Mr. Seamans put it very tersely yesterday: If the millers of this country desire to stay with us, they must either fish, cut bait or get out of the boat. We are tired of legislating for members who don't belong to this Association, and in doing business for those who have taken advantage of all we have done, without paying their full share of the expense.

The first business in order will be the reading of the report of the Secretary and Treasurer.

TREASURER'S REPORT, JUNE 1, 1881.—MILLERS' NATIONAL ASSOCIATION.

Balance in treasury June 1, 1880, per report	\$1,439.80
Received from Illinois Association account assessment, 1879-80	300.00
Received from Maryland Association account assessment, 1880	403.33
Received from Michigan Association account assessment, 1879-80	500.00
Received from Minnesota Association account assessment, 1880	821.04
Received from Missouri Association account assessment, 1880	917.63
Received from New York Association account assessment, 1880	36.17
Received from Ohio Association account assessment, 1880	360.00
Received from Pennsylvania Association account assessment, 1880	217.50
Received from Wisconsin Association account assessment, 1880	1,701.35
Received from Kansas Millers account assessment, 1880	128.34
Received from Nebraska Millers account assessment, 1880	105.00
Received from Virginia Millers account assessment, 1880	100.00
Received from Kentucky Millers account assessment, 1880	145.00
Received from Montana Millers account assessment, 1880	10.00
Received from District of Columbia account assessment, 1880	30.00
Received from California account assessment, 1880	198.37
Received from Indian Territory account assessment, 1880	10.00
Received from Delaware account assessment, 1880	30.00
Received from Tennessee account assessment, 1880	82.50
Received from Texas account assessment, 1880	72.50
Received from Colorado account assessment, 1880	10.00
Received from Oregon account assessment, 1880	35.00
Received from account J. B. Griffin, etc., suit	75.00
	\$8,083.04

DISBURSEMENTS.	
Postage and telegraphing since June 1, 1880	\$ 68.64
Blank books and stationery	3.50
Printing account Denchfield suit	59.75
Printing account circulars No. 7 and 8 assessment notices, etc.	75.20
Printing account crop reports	148.55
Traveling and hotel expenses, officers, including expenses at Cincinnati	391.00
Exchange paid on collection	15.10
George Harding balance on salary to June, 1880	1,528.00
George Harding account Parkinson bill, General office expenses from June 1, 1880, to June 1, 1881	3,000.00
Stenographer at Cincinnati	10.00
Underhill & Adams, Court stenographer Denchfield case	44.00
Clerk's bill U. S. Supreme Court	30.85
George B. Selden, account services	275.00
George B. Selden, account traveling expenses	81.75
Dft. account J. B. Griffin, suit	260.47
	\$6,794.11
	\$1,294.53

S. H. SEAMANS, Sec'y and Treas.

The Secretary then read report of the dues received from the different State Associations, giving a list of those State Associations that were delinquent:

ILLINOIS—Assessment of 1879, \$10 per run on 440 runs	\$4,400.00
Paid to June 1, 1880, on above assessment	2,313.22
Leaving due on assessment of 1879	\$2,086.78
Assessment, 1880, of \$5 per run on 440 runs	\$2,200.00
Paid by C. H. Seybt on account, Oct. 27, 1880	300.00
Balance due assessment 1880	\$1,900.00
Total due from Illinois Association	\$3,986.78

Mr. Seybt, Secretary of the Illinois Association, made a few remarks, briefly giving the reasons why the Association was delinquent in its dues. He further remarked that it was his desire that he should be relieved from the position he held, and had held in that Association for a number of years back, as his business relations had become such that he found it utterly impossible to do it justice; but on his return he would make a strenuous effort to redeem the credit of the banner wheat State of the Union.

INDIANA.—This State has paid nothing into the State Association on late assessments and ignores our correspondence entirely.

Mr. Elles, of Indiana, stated that he could not explain the cause why the Association of his State has failed to promptly pay its dues to the National Association, as he was not cognizant of its affairs, and could give no definite information on that matter. He further said that in the first place the Secretary of the State Association had been a defaulter to the extent of some \$1,500 and he afterward made some sort of a compromise for \$700. So far as he was concerned, he desired to remain a member of the National Association no matter what became of the State organization, and he was perfectly willing to

pay whatever money was required of him to so retain his membership.

IOWA.—This State organization has passed a resolution withdrawing from the National Association, and its members will be compelled in order to maintain their membership to pay their assessments to the National Association direct.

MICHIGAN.—Has paid but \$500 on account of assessments of 1879 and 1880.

Mr. Hayden, of Michigan, here gave somewhat briefly the history of the Michigan Association, and the many troubles it had encountered in many ways. He mentioned they had been somewhat unfortunate in the selection of some of its officers, but that in the beginning the State of Michigan had nobly performed its part in upholding and aiding the National Association.

The President here stated that it was the State of Michigan that really started this National Association, but in the last year or so that State had become sadly delinquent in the proper conducting of its affairs. That after the Convention at Cincinnati a year ago, Mr. Seamans, the Secretary of the National Association, had sent the Assistant Secretary to confer with them, which resulted in the re-organization of its present Association, but so far the organization has accomplished but little.

PENNSYLVANIA.—Assessment 1880 of \$5 per run on 47 run	\$235.00
Paid on account of above	202.50
	\$32.50

NEW YORK.—Assessment 1880, 290½ run of stone at \$5	\$1,475.00
Balance of account overpaid 1879	\$810.14
Paid during the year on account	36.17
	\$708.31
	\$508.00

The Secretary, Mr. Hinds, stated that New York should have credit for \$130 additional, the amount of a bill duly audited by the Executive Committee that had been paid by that State. There were some of the 290½ run reported in 1880 that had failed or gone out of business; the balance he thought that he would be able to report on very soon.

OHIO.—Assessment 1880 on 120 run of stone	\$600.00
Paid on account of above assessment	360.00
	\$240.00

Mr. Baldwin, of Ohio, here made a few remarks, stating the reasons as best he knew, why that noble State seemed so backward in its dues.

The Secretary reported that the associations in the other States had fully paid their dues.

Mr. Seybt stated that concerning the Cochrane matter, although possibly many of the members were under the impression that it had been settled, still such was not the fact. The speaker entered somewhat historically into the case from its commencement down to the present time. He further stated that he, in connection with President Bain and Alex. H. Smith, member of the Executive Committee of Missouri, had met Mr. Knickerbocker, the Secretary of the Consolidated Middlings Purifier Company, and after careful consideration and much earnest discussion, had made an agreement with him, subject, however, to the ratification of the Association at this convention.

Mr. Bain here said he wished to make a few explanations why this agreement had been made. He said it was not because he was not as thoroughly satisfied, as he always had been, that the Cochrane patents were a huge fraud from the beginning, but as a matter of policy. That on principle he would fight, but here he thought policy should govern. That as the members present were well aware, law was a very uncertain quantity. The suit might remain two or three years before the Supreme Court of the United States before coming to trial, and then might be decided against the Association. Besides, the Association was paying large yearly retainers to its lawyer. If the Association can save this large outlay, and at the same time the trouble and annoyance consequent therefrom, to say nothing of the chances that the suit might terminate unfavorably to the Association, it would be a matter of business policy to settle. As for himself, on principle he should not, but on policy he should settle.

Mr. Seamans spoke in opposition to the compromise or settlement. He saw no necessity for retaining high class lawyers, at so great an expense, to defend the suit, and it might be done for the same, or perhaps for less money, than it would cost to settle it. He had started out in this fight believing it to be a fraud, and was in favor of fighting it to the end. He did not believe in giving the Purifier Company a monopoly of the whole purifier business, which the compromise practically did. He further opposed it on the grounds of principle.

Mr. Baldwin, of Ohio, wished to know the

exact status of those members who had stood by the Association during the Cochrane fight and perhaps through no especial fault of their own, were now somewhat behind in their dues, citing Illinois, Indiana and Michigan as examples.

Mr. Woodard, of Illinois, said that in all cases that he knew of, any Association, as soon as a man becomes delinquent in his assessments, he ceases to be a member and has no privileges as such in the Association; therefore he was not in favor of allowing those who had failed to meet their assessments to come within the bounds of this agreement.

Mr. Sparks, of Illinois, thought if the idea of Mr. Woodward was enforced, great injustice would be done many of the members. He further stated that two years ago many of the members supposed that this suit had been fully settled; that many of the members who had supposed this matter fully disposed of had become somewhat negligent in meeting their dues, and he thought that injustice would be done if they were not allowed an opportunity of redeeming themselves.

After further discussion it was resolved that the names of all delinquents members whose arrears should not be paid into the National Treasury within 60 days from this date should be stricken from the roll of membership, and that the Secretary is hereby instructed to so notify them. Motion was made by W. P. Brown, of Red Wing, duly seconded, that the recommendation of the Executive Committee for settlement of all claims against members of this Association, under the Cochrane patent, be here approved. Carried unanimously.

The Association then unanimously adopted the following resolution recommended by the Executive Committee:

Resolved, That hereafter no miller shall be admitted to membership in the National Association unless by a majority vote of the Executive Committee, and that the State Associations be notified of this decision, and that all members hereafter admitted to the said State Associations are to be admitted to the National Association only on approval of the said Committee, and that the sub-Executive Committee shall have power to prescribe in each individual case the amount that such applicant shall pay as initiation fee. In cases where the Secretaries of the State Associations shall neglect to report or omit for any reason the name of any member of the National Association from his State, it shall be the duty of the Secretary of the National Association to notify such member that his name will be stricken from the roll unless his arrears are paid and his name so reported within 15 days.

The subject for rating mills for future assessments by the daily capacity of the number of run of burrs, on account of the great change in milling machinery since the organization of the Association, was then taken up and discussed at considerable length, resulting in the convention adopting unanimously the following resolution recommended by the Executive Committee:

Resolved, That under section four of the constitution, members shall be assessed hereafter, not upon the number of burrs, or their equivalent contained in the respective mills, but upon their grinding capacity in the following ratio: Each thirty-five barrels of the daily output shall be the equivalent of a run of stone for the purposes of assessment by this Association.

The Denchfield matter was then taken under consideration, and fully discussed by various members, resulting in the unanimous adoption by the Association of the following resolution of the whole Executive Committee:

Resolved, That the matter of defense or settlement of the Denchfield patent be left to the sub-Executive Committee, for them to take such action as they may deem advisable for the interest of the Association.

The Association here took a recess until 3 P. M.

THREE O'CLOCK, P. M.

Association called to order, President Bain in the chair.

Mr. Elles, of Indiana, made his report on modern milling as follows:

REPORT ON MODERN MILLING.

Since the meeting of our Association at Cincinnati, Ohio, in May last, there has been such a progress made in the art of milling and manufacture of flour that all previous improvements in mill machinery, with the exception of middlings purifiers, have been eclipsed to such a degree as to not even call for its repetition, and now there seems but little left to make better except in the arrangement of machinery. The millstone, apparently, has seen its day, although having done most valuable service to the human family, must now be classed, to a great extent, among the things of the past; but still we think its use will not altogether be dispensed with, as many millers believe the burrs as good for grinding wheat as the more modern machine, the corrugated iron roll; but about this fact I think they are

mistaken. There is one certain fact in connection with the rolls, and that is that they only crush and not grind or tear the grain in the process of reducing it to flour. The principle is simply this: to reduce the grain by a gentle process, so as to prevent the tearing of the bran and germ. But before going into this subject too far we think that the Jonathan Mills system should also receive some recognition. As I learn there has been quite a number of mills fitted up on this system, and from what I learn they give good results, in some cases better than even the roller system. There is one advantage claimed by the Mills system over the corrugated roller system that I think is greatly in favor of it; that is, that the flour made from their machines is sharper and more granular than that made on rolls, while the flour made by rolls is probably whiter; but this point is yet in dispute, and no doubt both processes need considerable development before they can be called perfect, and whether either will be perfected before some other mode of reduction will be brought to light or not, is a matter that is not at all impossible in this age of improvement and progress.

PURIFIERS.

This machine may be called the king of all machinery, for with its use the art of milling was first revolutionized, and with it the products of the mill were so improved, and the advantages so keenly felt, that the milling public can well say "Thou art a good and faithful servant." But to-day we find this machine of first invention, like many other machines, greatly improved; and the powerful, and we might say wonderful, agent of electricity, making its claim on the purifier as well as on its other and most wonderful inventions, the telephone and telegraph. What the Electric Purifier is going to amount to, is not yet, as I understand, fully decided, but have the best of hopes that we will hear of good results. The purifier worked by a suction or blast, cannot yet be laid aside, as they have done valuable and good service, and are still doing good work. The only difficulty with these machines is the waste that is made in the dust-rooms, but this has been checked to a great extent by the dust-collector which is attached to the blast-spout, collecting the dust and letting the air escape into the mill. The best of these machines, I believe, so far as my knowledge goes, is the one invented by Mr. Lacroix, a considerable number of which are now in use and have given the best of satisfaction. This machine does not only economize space in a mill, but also prevents the dangers of fire so common of late in mills having dust-rooms.

WHEAT CLEANING MACHINERY.

On this subject it is hardly necessary to dwell at length, for of late there has not, according to my knowledge, been any improvements made from what we had a year ago. That the cleaning of wheat before grinding is very necessary, no one will dispute; and after wheat is scoured and brushed, it should be well seen to that it is free from dust. I have found that to apply a suction for the last process for the wheat to run through, is a very good plan, and one that every miller can put up at a very trifling expense, and it will pay ten-fold its cost in a single year. Another simple and very effective cleaner is a conveyor with a circle bottom in conveyor box made of screen wire with a strong suction attached to that end of the conveyor where the wheat enters; it is much cheaper than a smutter, and with the exception of a separation of cheat, etc., from the grain, will accomplish both a good scouring and a separation of the scourings or fuzz caused by the friction of the grain with itself and on the screen wire. A trial of this is not very expensive, and I am sure will well repay any miller who may choose to try it.

BELTING VS. CHAINS FOR DRIVING MACHINERY.

To this subject I have given special attention in the past year, and must say that I have found the chain a great improvement over belts for a transmitter of power. The experiment that I wish to mention in particular is one where there was an eight-inch belt used for driving one of Barnard & Leas' Bran Packers on which were packed bran into sacks which when filled would weigh from 175 lbs. to 200 lbs.; the belt would continually slip and all means known to me were used to prevent slipping, but of no avail. After hearing of the chain and gearing, I at once ordered them for this particular place, and since they are in use I have seen no more trouble with it, and have increased the weight of sacked bran from 15 to 30 lbs. per sack. This chain and gearing can only be used to good advantage on slow motion machinery, and are not safe to

run at a speed of over 150 revolutions per minute, as the chain at a fast speed will have a jumping tendency; but for driving elevators, conveyors, bolting-rolls and machinery that does not require a fast speed, it certainly is far superior to belts, and does not cost complete as much as the pulleys that are used for belts to give the same speed, not mentioning the increased power and the prevention of slipping that is gained by their use.

HAFNER'S SPRINGS AND PULLEYS.

This simple and yet effective device for the prevention of back lash, etc., is a matter about which I have had many letters from parties using the Hafner Equilibrium Driving Pulley, with spring attachment, and all certify that it is a good and valuable device, preventing all strain on spindles, and overcoming the back lash so common in the use of cog and belt gearing. To those millers who are troubled with back lash in their gearing, I would advise a trial of these devices, and will say that they will be well pleased with it, and a relief will certainly be found by its use.

BOLTING.

The best way to construct a bolting chest is a matter that has been, in my opinion, fully settled, for all will concede that the bolting chest with two, or even three conveyors to each reel, is the bolting chest of the day, for with it the miller has full control of his mill, and without it he is at the mercy of his mill, and must take the product or the results as the mill makes them, and not as he would wish them. This point fully settled, the next and most important point is the arrangement of the silks or bolting cloths, and the spouts and cut-offs. About this many millers differ, but there is one point, and a very important one, too, that is, to relieve your chop of the dirt (as I will call it) as soon as you possibly can, and my reason for it is this, i. e., that the longer you carry this dirt in your reels, the less color you are bound to have in your flour, and the sooner you relieve your bolts of the dirt, the more color your flour will be likely to have. Therefore, arrange your reels by placing a coarse cloth on the end of every reel of such a number that it will carry off the dirt with some middlings (but be careful that the cloth is coarse enough so as to act at the same time as a duster), then send this product to a purifier to be finished, thereby making a final separation; this plan will apply itself to the handling of the wheat chop as well as the middling chop, and I can say that it is not any longer an experiment, but a reality. As for the proper number of cloth to use, I would say that this is one thing about a mill which cannot be decided on only by the miller in charge, for the mode of grinding is the only thing to go by, and therefore what numbers of cloth would suit one mill would be altogether worthless to another, and many a mill is run by just what the neighbor miller says, which, although true, leads the inquiring into a trap that causes a probable loss, not alone of money, but also the reputation of his flour. Therefore I would say to such millers as are always inquiring about what cloth their neighbor millers use, to be careful, and if you do adopt the same numbers that your neighbors do, then be particular that you grind your wheat the same, or else you will be left in the lurch to a certainty.

THE JONES' SYSTEM OF MILLING.

This system consists of rolls made from a peculiar kind of stone having grooves or furrows across their face, and called, I believe, a gradual reduction system. I have not had an opportunity as yet to investigate this system of milling; therefore cannot say anything about it, only that it is in operation in a mill in Louisville, Ky., and hear that it is successfully operated.

THE CASE PURIFIER.

This machine is comparatively a new machine in the market, and I think should have some consideration from millers; it is a machine that has more square feet of cloth in it than any purifier now offered in the market. The feed box of same works automatically, which of itself is a great advantage, as it is very simple, having no machinery about it, and consequently needs but little attention. The suction on this machine is arranged so as to be under full control of the miller, who can increase or decrease the same as the material may require it, which, if the least is said of it, is an advantage not given by many of the purifiers now in use.

SETTING OF BOILERS.

This is to those that are using steam power a very interesting subject, and I dare say that there are many boiler furnaces built, and now in use, which are consuming from 25 to 30 per cent more fuel than there is any necessity of, simply on account of the deficiency in

their construction. I would here say that I have been one that has paid dearly for this neglect. Of late I have had the furnace of our boilers reconstructed, and the arrangement is this: First we lowered our grate bars; second, increased the distance of the bridge wall from boilers; third, excavated the space between bridge wall and mud drum; fourth, increased the space from rear end of boilers to the wall in rear of boilers. With these changes I found the following results: First, that we could use fine coal where we formerly used lump coal; second, a saving of thirty-three per cent in the cost of fuel; third, our fireman had not half the labor to perform; besides this, steam is now made much easier. But how this arrangement should be effected by any one else is a matter that varies with the different class of boilers, and would advise you to consult some practical mechanical expert, who can give you full details and drawings to suit the boilers which you may have in use.

There are many other points in the construction of mill machinery which might be greatly improved on, one of which is the blowing of elevators, and which in many mills causes a great waste of good and valuable material, which if it was saved or prevented would undoubtedly go into good flour, whereas often it is swept up and goes into the low grade flour. It appears to me that some inventive genius could soon unravel this simple device, and I am sure that it would well repay him for his trouble.

With this, gentlemen, I conclude my report, and would say to you, as members of this Association, that I am convinced that there could be much good accomplished to all of us if we would pay more attention to the improvements in mill machinery that are constantly going on, while many of them are, so to speak, a humbug, but at the same time some among them are good, and should be recognized as such by the milling fraternity, while the poorer ones should also receive their just dues, thereby receiving savings to the milling fraternity of many thousands of dollars yearly.

NICHOLAS ELLES, Chairman.

The Association here went into the matter of the election of officers.

On motion of Mr. W. P. Brown, of Red Wing, Mr. George Bain was re-elected President by acclamation.

Mr. L. Fletcher, of Minneapolis, was unanimously elected first Vice-President.

Mr. Robert Tyson, of Baltimore, was unanimously re-elected second Vice-President.

Mr. S. S. Chisholm, of the firm of Chisholm Bros., of Chicago, made a few remarks concerning certain rights they claim under patents of Jonathan Mills and those purchased from Mr. Motley, of Rochester, N. Y., known as the "Degerminating Process."

There being no further business before the Association, it was moved and seconded to adjourn, which resolution was unanimously adopted, and thereupon the Association adjourned.

The Executive Committee were requested to meet immediately at room No. 9.

Upon adjournment of the Convention the Executive Committee held a meeting in the President's room.

Present—O. H. Seybt, Alex. H. Brown, L. Fletcher, P. H. Magill, J. A. Christian, Homer Baldwin, J. A. Hinds, S. H. Seamans, George Bain.

Geo. Bain called the committee to order.

On motion of W. P. Brown, the following were elected as sub-Executive Committee for the ensuing year:

J. A. Christian, Chairman, Alex. H. Smith, S. H. Seamans, C. H. Seybt, J. A. Hinds.

Motion made by J. A. Hinds, that S. H. Seamans be the Secretary and Treasurer of the Association for the present year. Adopted.

On motion of A. H. Smith, the Committee adjourned.

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(Mention this paper when you write us.)

The Old Millstone.

BY BRYAN CORCORAN, LONDON, ENGLAND.

For several years past English millers have been sorely tried by the competition with imported foreign flour and many have been induced by the exigencies of this competition to spend vast sums of money in adopting new systems of manufacture. The scare became so general and novelties were so eagerly sought after, especially from abroad, that any energetic foreigner or American with a "notion" and sufficient perseverance might hope to lead the fashion which changed as often as ladies' dresses.

I think that if our systems had been more carefully looked to and our old and tried friend the millstone had received better attention, much money would have been saved. Some of the new-fangled ideas have already died a natural death, others will soon follow, while only the improvements that are really good will survive to develop the true worth, for, though the crowd may be carried away by sentiment, the practical miller will be led by his own interest, and the result must ultimately be the survival of the fittest.

The millstone which has been in use for thousands of years, was at first worked only by hand for family use. The imperial mills at Pompeii appear to have been larger, and were worked by levers like a horse gear, and when mills were erected to go by water or wind, the millers were generally paid by appropriating a portion of the grist brought by their customers to be ground, and the "bunting" was often done at home. It was probable not till the miller became a merchant, buying wheat of his own and selling flour and offals, that it became his interest to discover the best means to make the most of his wheat. During several centuries many experiments in high grinding must have been tried, which pretty generally resulted in the low grinding common 50 years ago. The meal was dressed through a bolting cloth knocking against beaters; the nap or projecting hairs of the worsted allowing the harder portions to pass through more easily than the fibrous offals, made a neat flour in a very simple way, and the wear and tear is perhaps the main disadvantage of using them in these progressive days. Blackmore, the only maker now left, and grandson of the inventor of the present cloths without seams, estimates the cost of less than one farthing per sack of flour.

The Wire Flour Dressing Machine, which I believe is a thoroughly English invention, subsequently came generally into use, and though requiring a good deal of power, it does the work quickly, perhaps not so handsomely, but probably gives a greater yield than any other machine occupying the same space.

A similar horizontal cylinder covered with coarse wire, with brushes and beaters revolving in it, was used as a smutter to clean the wheats and did its work as far as it went most efficiently, but requires more power than vertical cylinders.

These processes hold good in the present day, having progressed and grown, and been subdivided into many branches, more especially in large establishments where a separate machine can be economically employed to do only its own definite work, while in smaller mills, a combination machine, that necessarily cannot attend to each portion so thoroughly, has to suffice.

About 40 years ago silk began to compete with wire, stretched on long reels, which occupied great space, but required little power or attention. In the good old days the meal was allowed to remain in the sacks for a fortnight to mellow before being dressed. The silk machine receives the meal and dresses it as it comes from the stones, its action also tends to cool the meal and renders the mill much more automatic. It makes a neat sack of flour, does not clean the offal so well unless there is great surface, but possesses many advantages. The alterations in these machines since their introduction, have been more in the interest of the makers than the miller, and there are seldom a sufficient number of these machines provided in the mill to do the work thoroughly.

Centrifugal silk machines, quite a recent contrivance, have lately been introduced, whereby the meal is thrown against the whole surface instead of falling only on a portion of the silk at a time. It lessens the size of the machine by about two-thirds, but requires a little more power to drive it.

The dressing of flour, like the separating and cleaning of wheat, can be carried out almost indefinitely, and flour is often dressed twice with great advantage. But it must be

borne in mind that more length of reel is required for fine than coarse dressing; for instance the same quantity of flour that will pass through No. 10 silk, will pass five times as fast through No. 5 silk.

The millstone being the most important part of the mill, it must soon have been discovered that on the way in which the work of the stone was looked after, depended not only the yield of flour in quantity, the trouble in dressing the meal and cleaning the offals, but also the quality of the produce, and the reputation and profit of the miller.

Millstones have been made of almost all the different sorts of stone that are known, and even in England native stones have been used for grinding wheat, such as grindstone and peak grit, conglomerate, granite, etc., besides Belgian stones resembling a dark marble, German Cullen stone or porous lava, and French Burr. The latter is universally preferred, and, although a flint formation varies almost as much as all the others above enumerated, so that very much depends on the quality selected.

The faces of the stones ought of course to be in part perfect planes, and good work depends mainly on the truth of the working surfaces. The furrows to a great extent, regulates the speed at which the wheat travels from the eye to the skirt of the stones, and as the work to be done varies at different parts of its passage, the dress of the stone has to be adapted to the requirements of the different stages. The spaces also between the faces are greater where the whole wheat enters at the eye than at the skirt where the meal is delivered. Millstones should be redressed after seven or eight days' constant work, and according to the nature of the wheat and quality of burr more or less of the surface is "cracked" with the millbill to bring up new grit, and it is really wonderful what results may be obtained by a good workman, and how the handling of the meal repays any extra care displayed in the stone dressing. It is very essential that the old dress should not be worn out when the stones are taken up, and bad stones retain it a very short time.

When it is sometimes passed more than once through the stones before the flour is produced, and the millstones can be adapted to deal with it in any way that may be required; but I confine my remarks to "low grinding," where the flour is made in one operation, and the aim is to get a meal that, when dressed, will yield flour not killed by too much pressure or damaged in color by the admixture of bran dust, while the bran and offal is free from flour. The practical miller can do this with the exception of about one per cent of fine middlings which consist of a mixture of hard semolina, portions of the germ, some of the inner skins of the wheat and branny particles which the ordinary flour dressing machine being unable to separate, gives rise to the use of the Middlings Separator. This machine extracts from the fine middlings the deleterious portions, leaving the hard semolina clean and fit to be added to the flour instead of going into the pig's trough, and it relieves the miller, who, instead of having to make good flour, clean the bran, and avoid making middlings, has only to study to make good granular flour and clean the bran.

The Middlings Separator cannot deal with the meal to separate flour and offals, but after all the flour and the offals have been taken out it deals with the fine middlings (or a residue of both). Hence to err in the wrong direction it is wise to increase the quantity of fine middlings by taking from the coarse offals some of the coarse middlings on the bran side, and some of the flour granules on the other or flour side, to insure no loss of flour in the offals and no branny particles to deteriorate the flour. Middlings are also increased in quantity by grinding somewhat higher, which can be done while still insuring clean bran, but was impossible when the object was to avoid making middlings.

Three-fourths of the semolina is readily extracted from the fine middlings, but it needs much labor to obtain the remainder pure, and scarcely pays to get the last particle.

This semolina is considerably coarser than the flour granules, and if mixed with them the baker finds the flour does not work evenly, and that the miller is supplying him in fact with a valuable ingredient which he cannot utilize to advantage; indeed, it troubles him as it makes some of his sponge rise before the rest, so it is very important that the miller should study to make the flour even.

The clean semolina is reduced to granular flour by the millstones, and the impure is passed several times through rollers, a slow process

but one which breaks the hard semolina while only flattening or squeezing the soft impurities and allows the flour to be sifted out and in this way the utmost quantity of flour can be obtained and all mixed together to make one straight grade.

In grinding the cleaned middlings some fibre is always disengaged which is dressed out with such semolina as is too coarse to pass through the silk; this can be again treated as middlings and subjected to a similar process.

Let us now glance at some of the new notions.

Roller Mills without the assistance of millstones produce a certain proportion of superb flour (say one-fourth) and the rest of lower qualities. In countries where the mass of the population eat inferior bread, the very poorest often having bread made of brown flour, and the highest class can afford to pay extra for the superior, or where this latter can be exported this system may have its advantages; but I think it will be conceded that if these different grades be mixed together, the bulk is not equal in quantity to the same quality of flour that can be produced from the same wheat with millstones without even the assistance of rollers; and in England be it remembered there is no demand for the inferior grades, but all has to be of an even quality. It is contended that it is better to break up the wheat into large pieces at first, and by continual breakings, reduce the semolina to flour, but this entails making the lower grades of flour in treating the bran, which is necessary in order to make up a fair percentage.

Millstones can also break up wheat with similar results in fewer operations, and it is difficult indeed to say what cannot be done with millstones by a practical man, who, the more he studies them the more he must be impressed with their power.

It is contended that roller flour is brighter than millstone flour, but even when this is the case, does not the latter make a better loaf of bread? It is easier to make a larger quantity of good flour with millstones, and it is a much simpler process.

Roller millers point to the inconvenience of having to redress the millstones, which entails expense, but do they require more attention than rollers which must also cause some trouble and also cost something to keep in order? The dressing of the millstone keeps them in the best order, and it is work that is well understood; while in the other case rollers cannot improve by use and the wear of bearings which must occur is necessarily detrimental and a steadily increasing evil.

There are many opinions as to the best diameter and most advantageous speed at which to run millstones for grinding middlings, but even roller millers allow that when middlings get very small, millstones are better than rollers for the purpose.

We get many good ideas from America, but it is well known that they never had good millstones till a dozen years ago, and now have very few. Is it not possible that they try to purify flour when it would be simpler to separate middlings if they ground differently? Would not such practice entail the necessity of using a great deal of machinery and conduce to making much stive dust, that has to be again collected at great cost of space and trouble? In gradual reduction the best flour is made from the middlings, hence an idea is prevalent that it is wise to make as many middlings as possible, but even this may be carried too far if it leads to bran grinding and doing other operations twice over. The ultimate aim of the miller is not to make middlings, but the greatest possible portion of good flour. A certain portion of extra quality flour can easily be made either with millstones or roller mills, but only at the expense of the rest, which must be of a relatively inferior quality.

Some machines are evidently made to rectify bad work, but it is a great mistake to suppose that the function of the silk machine is to make good any defect in the grinding or smutting, that a purifier should atone for bad construction or want of length in the silk reel, and that a bran duster is a certain cure if all else fail.

After all I have heard of the new systems, I think the old process will outlive them, as it is the simplest, easiest, and cheapest way of making the most flour out of a given quantity of wheat. I believe, further, that nothing has yet come forward that is likely to supersede the millstone, but it must be properly looked after, and every pains should be taken to simplify and carry out each stage most thoroughly, supplementing it with any improvement, for there is no question as to the keenness of the competition now raging between the old and new systems of milling.

The Barnett Flouring Mills at Springfield, Illinois.

A walk in the northern part of the city led us past the large flouring mills of our friends, Messrs. Warder and Barnett.

We were glad to learn, from the music of running machinery, that they had completed their extensions and improvements, and we determined to make a call and learn something about milling.

Reporting ourselves at the office, we asked for information and why they were enlarging and extending their mill and spending so much money on machinery.

They informed us that few are aware of the immensity of the milling interest; that the production of wheat is co-extensive with the growth of the Northern States and Territories and with its culture expands its manufacture; that the population is rapidly increasing, and that increased wealth, especially in the South and among the Freedmen, has resulted in a very greatly enlarged demand for wheat flour at home, while abroad several European countries are learning to depend on the United States for their supplies of flour.

At the same time there has grown a demand for improved quality in grades to an extent that has entirely revolutionized milling. A long list of journals are devoted to this one subject, whilst large and numerous shops are engaged exclusively on milling machinery, and every miller, all over the land, is striving to improve his modes of manufacture.

"What are the improvements sought after, and in what is flour better than of old?"

The improvements in milling are various in character and different in direction and degree.

Some millers strive in one direction, others in other directions, all, however, aim at uniformity.

That is, in making a hundred barrels of flour, that each shall be like every other barrel, and three months after, another hundred barrels shall be just the same as the previous.

This uniformity is a *sine qua non* of good milling, and very difficult of accomplishment, and impossible except in a large mill. The wheat must be carefully assorted as to quality and kind; it must be thoroughly cleansed from all foreign substances, the dirt all removed and each grain polished. The amount of this dirt, so removed, is beyond belief, and the improvement in the color of the flour is very great.

Next comes the grinding, and the after processes, which are all in the direction of purification.

No honest miller working on good wheat, to make choice flour, uses any alum, or chemical of any kind. He depends upon purification and the elimination of inferior portions, and to the improved modes of grinding to make his better grades of flour.

The higher the grade, the more may the purchaser depend upon the improved purity and healthfulness of his bread.

Under the old method of milling the object of the miller was to make the most flour he could from a bushel of wheat, and there were produced forty-three to forty-five pounds from sixty pounds of wheat, and they sold all grades mixed together. Under the new process with improved methods the amount of yield is secondary.

The quality is the first object, and the product is separated into several grades and sold for different objects, much of it for mechanical purposes.

It is not true that improved flour is not healthful. The reverse is the fact, and if any one wishes to test this let him purchase the third or fourth grade and try to eat what is here removed and separated and sold for mechanical purposes, and which of old, was eaten in bread, and he will then learn how much bad matter he was fed on, and be able to directly rate and determine why it is that the lowest priced flour may be "cheap but nasty." It is not conducive to health, comfort or economy; or, to state the case somewhat differently, the 43 or 45 lbs. are distributed say 20 to 30 lbs. in one barrel, 5 to 15 lbs. in another barrel, and the balance in still another, so that in the one case he can obtain a choice, healthful and pure flour, or in the next a medium and cheaper grade, or in the last a still cheaper and poorer quality. "Whichever you wish, gentlemen; you pay your money and you take your choice."

Taking our hat and making our bow we assured the proprietors that we would take their A 1 Golden Fleece in ours and retired.—*Springfield (Ill.) Republic.*

American New Process Milling.

BY GEO. T. SMITH.

I think the time has fully come when the old system of milling, viz., by grinding very close with sharp rough stones, and with a view to producing at one operation a product which shall be all flour and bran, must be abandoned; and I believe that millers without exception, certainly all who are at all enterprising and progressive, or who are exposed to competition with the high grades of flour manufactured abroad, agree with me in this conclusion. At any rate, the fact cannot be disproved. The change must inevitably come, and it is therefore a matter of the very greatest interest to British and Irish millers to inquire what changes they should make in their machinery, and how far, if at all, their present plant can be used in milling on a new system. In answering this inquiry—as I believe it can be satisfactorily answered—it is not my purpose to disparage any of the other systems now being introduced, but only to point out how the highest grades of flour can be economically made by the use of stones, for the largest and most important part of the work of reduction.

Before stating what alterations and additions I think are necessary to be made to the present appliances of English mills, I may be permitted to point out that the machines I shall name are such, and only such as would be required in taking the first step towards the adoption of any system of gradual reduction.

Whatever process of milling may be finally decided upon by any miller, he will find the additions I recommend to his machinery equal as well adapted to that part of the work for which they are designed as in the system to be described.

In order to give a clearer idea of the principles on which the most important feature of this process of milling is based, it is desirable to go back to about the year 1871 when the system originated in America, and trace its gradual development. At that time the writer was engaged in an eight-run mill in Minnesota. These were new stones, very rough and greatly out of truth. In order to get them to a true face very light staffing was done; as they got down, the lumps only were carefully dressed. This was done first with the mill chisel, and afterwards with the rub block. As the stones became smoother it was noticed that the quality of flour was greatly improved, and this led to further efforts to smooth the stones by rubbing and very light dressing. In the end only the diamond was used for dressing, and the rubbing was done with blocks of sand stone and sand and water. At the same time the proportion of face to furrow was reduced, and this reduction was carried on until the meal, after separating the bran, was about two-thirds middlings. Here, then, are the two things to be observed in the dress of the stones; first, they must be smooth to avoid cutting up and powdering the bran, thus improving the first flour; smooth stones will not cut up the germ, but will roll it into a shape somewhat resembling a small worm, so that the greater portion of it is easily dressed out. Second, the proportion of face to furrow must be very small, as this gives a large percentage of middlings. The grinding should be sufficiently high to make it necessary to clean the bran separately. This high grinding answers the double purpose of improving the quality and diminishing the quantity of first flour, both of which results it is desirable to accomplish.

A large increase in bolting capacity is demanded. The time has gone by when it will answer to make one reel dress for half-a-dozen pairs of stones, clothing it with silk, numbered from about 5 to 8. I strongly suspect, that not a little of the American flour which comes to British markets as "new process" is nothing more than "wheat" flour, the superior grinding and dressing employed in its production, giving it a color and appearance which enable it to pass muster as the higher grade. Such a flour can be and is sold at a price less than the cost of its production, but the large profit obtained on the patent flour affords a satisfactory margin on the whole output. For dressing I prefer reels of the ordinary type in chests of four, six, eight or more, on account of economy of room, ease of driving, and superiority of work. In the manufacture of the higher grades of flour thorough purification of the middlings is absolutely indispensable. This is not the place in which to go into the details of a system of purification, but the aim should be to carry it to such a point that the purified middlings as they go to the stones, should be nearly as possible free from every-

thing that is not actually fit to go into the flour. If middlings are purified to this extent, they may be ground very close, and the bolting done on much coarser cloths than are used for the wheat meal, thus yielding the sharp granular flour so much desired. For cleaning the bran, I know of nothing better than corrugated rolls, with from 20 to 28 corrugations to the inch, and having a differential motion of about three to one. Tailings are best treated with porcelain rolls driven at uneven speeds, because this class of material is of a fibrous character, and while the pressure of the rolls upon it—corresponding to the weight of the stone—is sufficient to properly reduce all the valuable portion, the grinding action, even with rolls driven at high differential speeds, is so much less than that of the millstones, that the brown fibre is not pulverized to such an extent that it can be readily separated in dressing. For extracting the germ remaining in the middlings, smooth iron rolls running at equal speeds are nearly indispensable.

Nearly all the high class American flour which comes to the United Kingdom, is made in mills arranged practically on the system above described, and I am well enough acquainted with the class of wheat which British millers have to deal with, to say with the greatest confidence, that with a careful and intelligent attention to carrying out the details of the process I have described, they will be able to produce flour quite good enough to put them above the fear of competition from any source whatever.

Thomas Blanchard, the Inventor.

Blanchard was a born genius in mechanics, so that he seemed to comprehend its laws and motions by intuition. His faculties were largely concentrated in constructiveness, and while by no means deficient in others, in his youth he seemed so to strangers, from a perverse impediment of speech. This he overcame in after years.

When he had arrived at the age of eighteen, his elder brother Stephen started, in a bordering district in West Millbury, a factory with horse-power, to make tacks, and he appointed his unfortunate brother to the position of heading them in a vise, one by one. Once in a mechanic shop, his dormant genius began to wake up. Ere that youth had spent many months in this dull task he had designed, constructed, and put in operation a machine that made tacks at one motion, faster than the ticking of a watch, and more finish than those made by hand. So perfect in design and construction, it was operated over twenty years, and experts who have seen it say no essential improvement has ever been made upon it. The neighbors could not at first be made to believe that that stammering youth ever invented it, but when they found he had hardly been out of the school district, they were constrained to give him the credit.

In the same town of Millbury, a few miles below his shop, on the Blackstone River, were extensive armory works, engaged in manufacturing guns for the United States. The proprietor was then intent upon improving on the English mode of making gun barrels, which was to weld them by hand, and grind them down before a revolving stone. He had invented a process of welding them under trip hammers, by which the work was done better, quicker, and cheaper, and it was adopted at the national and other armories in this country and Europe. Finding that the grinding process left the barrels of unequal thickness around the calibre, and made them liable to explode, his next aim was to turn them in a lathe. In this he succeeded, by a lathe patented December 19, 1818, so far as the barrel was round, but to turn the irregular shape of the butt baffled all his efforts, and not his alone, but of all the most ingenious mechanics in all the armories, of which there were eight—two national, at Springfield and Harper's Ferry, and six private in United States service, for supplying the different States. Most of them succeeded in turning the barrel so far as it was round, but all failed in their attempts to turn the butt. It could only be reduced to shape by hand-filing, and that cost a dollar on each gun. The prices paid the contractors by the War Department were limited to the cost of making arms at the national armories, and the reason given was that, as necessity is the mother of invention, they would be compelled to make labor-saving improvements to secure their profits, while the mechanics in those armories, being paid by the day, had no such motive.

The wisdom of this policy was abundantly verified, and the public of to-day are little aware how much they are indebted to the private armories for mechanic improvements.

Guns were formerly made entirely by hand, and most iron-work was reduced to shape by hand-filing, which a large class of mechanics followed as a profession. It has now become nearly obsolete, the work being done by machinery. The contractors having labored a year or more in fruitless attempts to solve the problem of reducing the butt by a machine, at length the proprietor of the armory works at Millbury, in sheer desperation, hearing of a budding genius in a border farming district, sent for him to come to his armory. When he came he seemed a stranger to all present, diffident, had a stammering tongue, and not much was expected of him. Being told what was wanted he glanced his eye over the machine, began a low monotonous whistle, as was his wont through life when in deep study, and ere long suggested an additional, very simple, but wholly original cam motion, which upon being applied relieved the difficulty at once, and proved a perfect success. The proprietor was delighted, and turning to him said: "Well, Thomas, I don't know what you won't do next. I would not be surprised if you turned a gun-stock!" naming that as the most impossible feat in mechanics he could conceive, it being neither round nor straight in any part. Thomas began his peculiar whistle again, and then stammered, "We-we-well, I'll t-ry that." Whereupon the workmen who had gathered round burst into a loud laugh at the absurdity of the idea. The germ of the stocking machine lay in that cam motion, and it was then and there, as he afterward said, that the idea of his world-renowned machine for working out irregular forms first flashed through his mind, although it required many months to elaborate it.

Blanchard was soon called to Springfield armory to adjust similar cam motions, and on a return journey, when riding solitary and alone in his carriage, he suddenly exclaimed, like Archimedes of old, with great glee, "I've got it! I've got it! I've got it!" Two men by the wayside overheard him, and one said to the other, "I guess that man is crazy!"

He sold his tack machine for five thousand dollars—a mere trifle for its worth, but a great fortune to him then. He built a shop, filled it with tools, and kept himself looked in for about two years. At last he emerged, and brought to the armory at Millbury a miniature model of his stocking machine, and it operated so well that a full-sized working machine was decided upon. The aid of other mechanics was called in, and Blanchard's first eccentric lathe was built in Millbury. In the mean time the fame of it had reached Washington, and the Ordnance Department were desirous of having it launched into notice from the National Armory at Springfield. Blanchard, feeling a just pride in this recognition of his great invention, ordered it sent there. It remained long enough to build a new one, was then returned to Millbury, and set up in the armory, where it was continued in operation about twenty years.

When the news was first proclaimed from Springfield, of a machine running there which turned gun-stocks, it was generally discredited. But mechanics came flocking from far and near to see the mechanic phenomenon.—*Ava H. Waters, in Harper's Magazine for July.*

Corn Meal.

A Kentucky correspondent writing on the subject of Northern and Southern corn meal to John P. Hawkins, Major Commissary of Subsistence, U. S. A., says: "We have here the best of meal, and it is all made on French burrs. The best meal is made from white flint corn. No. 1, then, must be from selected white corn, round and dry. A good farmer will, as he uses corn, throw by daily a few ears in a pile by itself for bread. The nub ends of this selected corn are devoted to chickens or pigs; the best part only goes into the meal-sack. The miller sees that as the meal runs from the stones it is of the requisite fineness and has a round, grainy feel to the fingers. If too coarse, there is loss in sifting; if too fine, it has a floury feel and the life has been ground out of it; it has been 'killed' and will make soggy and unpalatable bread. Corn meal must not be ground too fast. Horse mills and water mills therefore make the best meal. A steam mill can make as good corn meal if the miller will 'go slow.' Much of the meal sold in cities is made from all sorts of corn, including that which is mouldy and wet. No wonder it does not keep well and, that few people like it!"

"Take No. 1 meal to the kitchen, where are eggs, lard, buttermilk, soda (no sugar) and a good old Kentucky cook, and we will have bread good enough to eat in any household. Take a sack of No. 1 meal from Kentucky to

any New England village and have it made into bread and you will be convinced they do not know how to do it. In a word they have not the 'habit,' though in the making of wheat-bread they may equal all."

Mr. Hawkins, commenting on the fact that the South has good corn bread and the population there mainly subsist upon it, while the North has poor corn bread and use but little of it, says that taste and habit may partly account for this difference, but does not afford the entire explanation. It appears to him that Southern people take corn bread because their meal is fit for human food and that the Northern people do not eat corn bread because the Northern meal is not fit for human food. He says: "Chemical analysis should show what makes the material difference in the Northern and Southern corns, and it ought to follow from this knowledge that the corn growth at the North for human food should be cultivated with a view to making it as nearly as possible like in its elements to the Southern corn. This might be done even if it were necessary to import every year from the South the seed-corn for planting."

Interesting Facts in the History of Patents.

The first recorded patent was issued by Edward III., of England, to "two friars and two aldermen" for an alleged discovery of the "philosophers' stone." It is to be presumed that the law officer of the Crown had serious doubts whether the "friars" and "aldermen" really discovered it, and he therefore stated it as an "alleged discovery." The term "alleged invention" has ever since that applied to new discoveries. It is also a little singular that the first recorded patent was for an invention as impossible in its nature as "perpetual motion."

Lord Cromwell, in 1539, obtained a patent which conveyed to him the exclusive right to print the English Bible for five years. It is unfortunate for the revisers of the present day that they were not allowed a like privilege.

The Stationers' Company, of London, the most odious and unjust monopoly ever instituted, were granted a patent in 1615 to "the exclusive right of printing primers, psalters, psalms, almanacs and prognostications."

The first patent on printing machinery was granted to Arnold Rotsipen, of England, June 24, 1634, and the same year "John Day Grant, citizen, fishmonger and broom maker, of the city of London," was granted a patent "for the sale and printing of the weekly bills of the price of all foreign commodities for the term of fourteen years."

In our own country Samuel Winslow in 1641 received from the general Court of Massachusetts a patent for the term of ten years for a process of making salt. In 1652 the Superior Court gave John Clark a patent wherein it was decreed that a royalty of ten shillings should be paid by every family who should use his method of "saving wood and warming houses at little cost."

Patent laws are two hundred and fifty years old. Fifty-eight nationalities have patent laws.—*American Inventor.*

Wheat Transportation.—Its Cost in Different Countries.

The cost per bushel of bringing wheat from the great centers of production and distribution of the leading markets of Europe has been elaborately compared and tabulated as follows by Mr. R. Meyer, in the *Austrian Monthly Journal of Social Science and Political Economy*:

FROM	TO	
San Francisco.....	England.....	\$0 36@40 37/
The "Far West".....	Atlantic Harbor.....	40
New York.....	Liverpool.....	19
Chicago.....	Liverpool.....	19
Bombay.....	England.....	18
Calcutta.....	England via Suez.....	18@ 20
Calcutta.....	England via Cape.....	16@ 20
Australia.....	England.....	21
Buenos Ayres.....	Havre.....	16@ 20
Odessa.....	England or Antwerp.....	13@ 22
Podwolocziska.....	Delhi.....	44
Brody.....	Delhi.....	42
Brody.....	Hamburg.....	31
Ibraila.....	London.....	57
Galacz.....	Hamburg.....	31
Budapest.....	Hamburg.....	31
Budapest.....	Liverpool via Fiume.....	28
Lamberg.....	Frankfort-on-the-Main.....	26
Vienna.....	Frankfort-on-the-Main.....	24
Vienna.....	Fiume.....	21
Vienna.....	Trieste.....	21

From Odessa is shipped the wheat of Southern Russia. Brody, in Northern Galicia, collects the wheat of the upper valleys of the rivers of Southwestern Russia. Lemberg close by, is the capital of Galicia. Ibraila is the shipping point of Wallachia. Galacz ships the wheat of the upper valley of the Danube. Budapest is the central point of Hungary, as Vienna is of Austria. It costs nearly as much to carry wheat from Brody to Lamberg, 58 miles (no railway), as it does from Chicago to Liverpool. From Vienna to Trieste is about 250 miles by rail; in cost of transportation it is further than from Calcutta to England around the Cape. California can easily compete with Hungary in the markets of Western Europe, the cost of raising the wheat being the same.

GOING TO MILL AND TO MARKET.

Thirty Years Ago in Wisconsin.

WRITTEN FOR THE UNITED STATES MILLER BY
JOHN W. HINTON.

GOING TO MILL.—No class of people has derived more benefit from the modern facilities of "milling" than farmers.

Many of us remember when our grist had to be sent by team on almost impassable roads from 30 to 40 and even 75 miles to mill. "Getting ready to go to mill" was no ordinary talk, the preparation taking some time. The primitive settlers had to get their grists together, enough to make full load, 40 to 50 bushels, the latter quantity only when the roads were good, and the prospect for continued fine weather reasonably certain. Two yoke of oxen generally drew the load, the teamster had "his grub" with him, as also feed for the team. The journey sometimes took two weeks, particularly if the mill was out of gear, or the water was low, and they had to shut down to let the pond rise.

On such occasions there was a fine chance for the miller to make a good trade, flour for wheat, and there was some amount of "scalping" done in those early days. When a load was brought to mill a distance of 60 miles, the teamster couldn't afford to wait for the repairing of the mill, or while the "stones were picked," a fact the miller knew; and so many sharp bargains were driven. To-day the best of flour is almost as accessible to the new settler upon the frontier as in the older settlements. In old times reaching the mills was, in the wet weather, actually ploughing through roads where the wheels would sink in to the hubs, which leveled off the mud squeezed out in streaks. Now the farmer markets his wheat readily and buys his flour as he buys anything else. Mills and railroads have wrought wonderful changes.

DRAWING GRAIN TO MARKET.—WISCONSIN TEAMSTERS THIRTY YEARS AGO.—Looking out of our room one day last week, we observed on the opposite side of East Water street, a common farmer's lumber wagon, with the old-fashioned "spring seat," elevated about two feet above the front end of the wagon box. The springs were very simple. Two iron-wood poles, hewn a little on each side, the hind ends fastened to the box with square staples, their middles resting on two hooks gripping the upper edge of the box, the seat secured to the ends by iron bolts and nuts. Another noticeable feature about the team was the hames of the harness, which were surmounted by pieces of black bear skin, their edges trimmed with scarlet flannel. The whole turnout was precisely of the kind that was used in early days, when, say thirty years ago, East Water street would be lined with such teams, and when, by such means, the grain crop of the interior, from nearly every portion of the State, was hauled to Milwaukee. And what memories and associations that farmer's team, rigged as it was, called up. It was so much like the old-fashioned teamster's rig referred to.

Running back in our memory twenty-five to thirty years, and we find that the roads across Portage Prairie, through Fox Lake, Beaver Dam, Rolling Prairie, from Oshkosh and Fond du Lac, from the Baraboo Valley, Columbus, &c., all united at Watertown, and all the "travel" came to Milwaukee on the "Plank Road." Between this city and Watertown the writer has counted, in one day, upwards of three hundred teams loaded with wheat bound to Milwaukee. The usual load for a team was from 30 to 40 bushels. The regular price paid for hauling the wheat, say ninety miles, a three days' journey, was 25 cents per bushel, and for hauling back goods to the country stores was from seventy-five cents to one dollar per one hundred pounds weight. Sometimes loads of emigrants were obtained, which paid better.

The teaming, of those days, called into occupation a class of men that have long ago disappeared from the State—ever since the iron horse superseded the teamster and his horses. What has become of the teamsters? was the question we mentally asked ourselves, while looking at the team noticed above. Where are they gone?

How many of the noble fellows—for here were men among them who were truly noble—how many of them fell fighting for the Union, and left their bones on Southern battle-fields? They were a rough and rugged lot. They were more like sailors in their talk, habits, and impulsive manners, than any other class of men. Free and frolicsome, often wild and

full of mischief, and yet there were very few drunkards among them. They were great practical jokers, and excellent *compagnons du voyage* to the travelers, who often rode with them, paying but a mere pittance, if anything, for the privilege, but with the strict understanding that "they would have to walk up the hills."

"Kellogg's Tavern," in the Rock River woods, twelve miles this side of Watertown, at the junction of the Madison, Watertown and Milwaukee roads, was a great resort for teamsters. The triangular piece of ground in front of the house was frequently covered with wagons, often as many as seventy-five teams putting up there over night. The house had an excellent reputation; the food was good, and the beds were clean, and the landlord was liked, while, in addition to the whole, to use the language of the teamsters, "the landlady was an almighty smart woman."

The large upper room of the long log building was called the "School Section," and all over the floor of that room, beds and "shake-downs" were made up to accommodate the crowds that flocked there. In those days drinking was practiced fully as much as it is now, with, however, much less drunkenness. Teamsters, as a general rule, "took something" when they entered the house, and usually "smiled" when they left, always at the invitation, and always at the landlord's expense, as were also the cigars taken at departure. It was amusing to watch some of the teamsters come down stairs bright and early, and make to the bar for their bitters. "Tansy" and whisky were the only ingredients used in the compound, and as the whisky cost only from fifteen to twenty cents per gallon, and the "tansy" could be had for nothing, "bitters" were cheap.

One old teamster, we now distinctly call to mind, and who, in those early days, had "teamed it" for several years, had habits, ways, and a dialect purely his own. Of one fact there was no doubt whatever, "Old Bill," as he was known everywhere on the road, was very fond of his bitters. He was an original. He had got through teaming on the road from Madison to Milwaukee; he said "the Mil. & Miss. R. R. had bursted teaming there." Bill was a very early riser, and as soon as he came down in the morning would make straight to the bar, saying as he approached the bartender, "come, old fellow, let's have an eye-opener," and clutching the decanter, swallowed down a third of a small tumbler of "tansy" without a wink, and off he would go to the barn, where, having cleaned his horses, he would come to the bar and again address the bar-keeper: "Come, old fellow, let's have a phlegm-cutter," and down went and another drink of "tansy." Returning to the stable, he would harness the horses, all but the head stalls, and, as soon as the first breakfast-bell rang, in came Bill to the bar: "Come, old fellow, let's have an appetitener," and again the "tansy" suffered. Bill then washed his hands and face, combing his hair and whiskers, which were very heavy, with particular care.

After eating a hearty breakfast, he would "hitch to," drive up to the door, when invited by the landlord he would reply: "Well, guess may as well take a starter," and bidding the host good-bye, would mount the spring seat, crack his whip, and start off. And yet this man whose habits we have described, "was never the worse for liquor," as the saying was. He was perfectly trustworthy, for he was frequently trusted with large sums of money, of which he was never known to lose or misapply a dollar.

The visit of Kossuth to this country was the means of introducing the hat that bears his name. The Kossuth hat, with the flowing feather, was just the thing to take well with the fancy of the teamsters, and thousands of them wore it. The sight of fifty or sixty, and sometimes a hundred teamsters, winding their way along the plankroad in the Rock River woods, the sides of the road skirted with dense timber, some of the trees towering up a hundred feet, many of the teamsters' heads surmounted with a Kossuth hat and long, black, waving plume, was a wild sight, and made one think for a while that they were the wagon trains of several tribes of banditti, returning with the plunder of some sacked city, and in imagination you expected to see the rear brought up by Massaroni himself. But there were no plunderers there. They were rough, it is true, but rough and true. Rustic to some extent, and generally uncultivated, but still high-minded, naturally intelligent and thoroughly independent, they were American citizens in the full sense of the term.

Another teamster, a frequenter of the road we have mentioned whom we recollect clearly,

who is yet living in Wisconsin, and whom we flatter ourselves will be recognized by the portrait we shall endeavor to draw of him, he too was an original. He was a genius, a rough diamond, but of the purest water. He was tall, of slim, yet wiry build, lithe as an eel, of erect stature, and was straight as an arrow. He had a dark complexion, his skin was bronzed from his constant exposure. He had a fine head of black hair, and a brilliant, dark, flashing, yet benevolent eye—such an eye that a child likes to look into, and always with trust and confidence. He was a humorist of a high order of originality. He had an inexhaustible fund of mirth and stories, and was always ready with quick repartee, and a dry remark or response, that often sparkled, and seemed playful, as it cut to the quick—a power he never used, however, except in a good cause. He scarcely ever laughed, though he would often provoke almost uncontrollable mirth in others. "He laughs inside of him," was the comment of a brother teamster. He had a most excellent voice, and a full supply of "nigger ditties" and comic songs, with which he often beguiled away a dull hour on the road as he was "teaming for a living." His team and entire rig was as old, and quite as original as himself. His horses were as well known on the road as were their owner. "Old Grey" and "Buckskin" were the cognomens of the pair of steeds, who together would not have sold, at public *rendue*, as they said, for seventy-five dollars. Yet they were stanch as steel, and never balked with their owner for a driver. He would often pretend to, but never did strike them. He drove them by talking to them only. "There's music in his voice; see how them bastes minds him," said an Irishman who knew him well, whom and his family he had moved out. "Faith and it's charm them he does. There's not another man in Ameriky that could make 'em draw a setting hen off her nest, barring himself." He had a musical voice; the horses knew it and "minded him." There was one secret about the matter: no team on the road had better care taken of it. It was always well cleaned, fed, bedded and blanketed. On several occasions we rode with this teamster we have described. One trip in particular, and the last one, though fully thirty years have elapsed, is as fresh in our memory as if occurring but yesterday, for that team of last week, with its "gray" and "dark cream-colored" horses, reproduces it in our recollection. The journey was from beyond Fox Lake to Milwaukee. We reached Watertown, and, after staying there all night, were soon in the dense woods this side.

It was late in the fall of the year. The fine thrifty maple trees that crowded the margin on each side of the road, winding its way through the heavy timber, were in the very perfection of their richest autumnal tints. A puffy breeze kept their foliage stirred and twirled, displaying their golden, yellow and deep brown and red colors. As if to variegate, and give a sparkling vivacity to the scene, a few poplars and aspens, that had not fully shed their leaves, turned them up every second or so, throwing sprays of silvery sheen in among the wooded landscape. The frosts had sharply nipped the herbage, dotting and streaking with a pale brown color the coarser grasses and "flags." The lattermath, on the patches of marsh land, peeping out here and there in small spots from the thick woods, had been browned on its edges and points; the lower part of the grass was still of the deepest green, furnishing a fine and varied contrast to the more lively and vivid colors of the maple and other leaves, that high up above them glowed and glistened in the flashing sunshine. The whole scene was lovely, charming and exquisite. There was a singular stillness and quiet in the woods, jarred only by the hollow-sounding footfalls of the horses on the "plank." Suddenly the stillness was broken, and the quiet disturbed, by the clear musical voice of the teamster as he struck up one of his "negro ditties":

"Way down South in the State of Indiana,
A pretty little girl I used to know;
Her hair was black and they called her Anna,
And she lived on the banks of the Ohio."

CHORUS.

Den let de banjo ring, sound de merry tamborine,
Play upon de castinet, touch de violon.

Here, an admonition, in very emphatic language, was given to "Old Grey and Buckskin" to "Git up; you don't want to stop cause I'm singing." Then came another verse—

"I took my love to the ball one night;
When we went to supper,
She put a turkey leg in her eye,
And stuck her nose in de butter."

CHORUS.

Den let de banjo ring, sound de merry tamborine,
Play upon de castinet, touch de violon.

There was another song, of the many that were sung, that, like the one from which we

have quoted but two verses, we have no recollection of ever having seen in print. It was set to a much quicker, more lively tune than the first, while the words were so decidedly unique that we transcribe them from memory:

Old massa was a stingy man, everybody knows it,
He keeps good whisky in de can but never says he goes it.

CHORUS.

So go day, come day, Oh! how I wish 'twas Monday,
We habs good liquor all de week, and buttermilk on Sunday.

Old Missus says we cut too much, and wears out too much trousers,
We're going to feed on atmosphere, and dress in Nature's blouses.
So go day, &c.

I went to town the other day, to take a load of peaches,
De horse fell down and kill the cart, smash him all to pieces.
So go day, &c.

Consumption Joe went out one night, tobacco leaf to liver,
He coughed himself right out of sight, and sneezed up half his liver.
So go day, &c.

By the singing of such songs and the relation of stories, often of the drollest kind, and cracking jokes at passing teamsters, time was killed, and the journey relieved of its monotony.

Two of —s tricks or jokes we will relate in closing. Fancy a breakfast table, at a tavern by the roadside, crowded with teamsters and farmers, when —, with a serious look, calls the landlord to his side at the table, and in a stage whisper—"Say, landlord, I'm glad this coffee don't owe me anything." The landlord smilingly asks, "why?" "Because," says —, "I'm afraid it'll be a long time before it settles." A hearty laugh followed this remark and the landlord joined in, notwithstanding the "sell" that had been perpetrated upon him.

Another joke was this: He had just emerged from the woods, going north, his wagon and team covered with mud from the awful roads he had passed through, when he met a farmer driving on a load, who addressed him: "Say, mister! How's the roads?" "First-rate. Leastways the one I came on was." "Which one was that?" asked the farmer. "The new one," responded —.

"Well, where is it?" queried the farmer.

— had started up his team lively, and looking back over his shoulder with a leer on his face and inimitable drollery in his voice, said: "About two feet below the old one," and on he started, the farmer swearing loudly at him.

But as the limit of our space is reached, we must defer any further accounts of a class of men now obsolete in Wisconsin, yet, no doubt, still to be found in other new countries, and retaining all the peculiarities known only to "country teamsters."

Scarcely anything notes more clearly our progress in Wisconsin than the "going to mill," and "going to market," thirty and thirty-five years ago, with the condition of things then and now.

To-day there are over eight hundred flouring mills in Wisconsin—fifteen in Milwaukee with a capacity to make in our city, daily, 9,000 barrels, or 2,808,000 barrels of flour in a year. They made in 1880, 624,400 barrels, or, more barrels of flour made in Milwaukee, in one year, than there were bushels of wheat raised in Wisconsin for many years after the time of "going to mill" we have described above.

As to "going to market" with grain, the farmer often returning empty in pocket, after selling his grain—if he had come a long distance—the iron horse has supplanted the equine steed, and such are the marvelous facilities for drawing grain to Milwaukee, that in three days of September, 1873, there was brought to Milwaukee by railway 1,164,948 bushels of wheat, or upwards of a million bushels of wheat in three days. Those receipts of wheat were the largest ever known at any one point in the world; in one day more than 500,000 bushels were brought into Milwaukee.

These are facts worth, perhaps, a few moments thought for the readers of the UNITED STATES MILLER.

TROY BOLTING CHEST.

Pat. Aug. 31, 1875, No. 107,362, by Swisher & Campbell
Manufactured and Sold by

E. P. CAMPBELL,

MILL AND ELEVATOR BUILDER.

I will send my neat circular, describing my plan for bolting in mills, grinding low, half-high or high, for two 3 cent stamps. Send for my illustrated circular and price list. Address

E. P. CAMPBELL,

Greensburg, Ind.

(Mention this paper when you write us.)

AMERICAN MILLING.

BY ANDREW HUNTER, OF CHICAGO, ILL.

[A paper read before the National Association of British and Irish Millers in London, England, in May, 1881.]

To describe minutely the various changes made in American milling, since the year 1870 until the present time, would describe a large volume. There is no acknowledged system as yet that is adopted as a standard. Our leading millers have spent fortunes experimenting on new process milling. For in order to change a mill from the old system to the new process, it was advocated by milling experts, to first reduce the speed of the buhrs from about 200 revolutions to 120 per minute for a four-foot stone; next to reduce the face of the buhrs to three-fourths furrow and one-fourth land, and next to reduce the feed from about 18 bushels to six or eight.

The introduction of purifiers into America, by the late N. C. Lacroix, a French millwright and draughtsman, solved the problem how to dispose of a coarse material called sharps or middlings, which, when purified and ground, made a better flour than from the first grinding. The great revolution made in milling is due to the use of middlings purifiers. It prompted millers to make as many middlings as possible. What would high grinding avail us if we could not purify the middlings? It is not my intention to enter into the theoretical details of American milling, but to give a sketch of the best and latest system, and one which British and Irish millers can adopt without incurring the enormous expense of "gutting" and rebuilding their mills.

What is called new process or high grinding, is being abolished by our best millers in Minneapolis, Milwaukee and other milling centres, and gradual reduction substituted. I do not know of a mill in America that is now using a patent dress with three-fourths furrow to one-fourth land; all that put it in were compelled to take it out and use an equalized dress. There are a great many millers who grind to suit their purifiers, because they can not handle soft or uneven middlings; that is the fault of the purifier not of medium grinding.

When new process or patent flour sold for exorbitant prices, then millers could afford to grind very high, and take about six bushels of wheat to make a barrel of flour. They could afford to sell their first flour for a low price and make money. But now, since the entire system of milling in America has been changed, and medium grinding or gradual reduction adopted, and a more perfect system of purification established, it has compelled those who took six bushels of wheat to make a barrel of flour to mill more economically.

I will here give some details of the working of the oldest mill in St. Louis, built over forty years ago. The details can be carried out by any miller in the country without gutting or rebuilding their entire mill. The mill I refer to is owned by the Union Steam Mills Co., William H. Maurice, President, and H. Bycroft, an Englishman, head miller. They have four runs of stones 5-ft. in diameter on wheat, one 3-ft. stone on their middlings proper, and one 3-ft. stone on fine middlings. They have a 30-in. stone on tallings, and one set of rolls for crushing the germ middlings with the necessary cleaning machinery. They make with four runs on winter wheat, 400 barrels of choice flour per 24 hours. They make 83 per cent of Calla Lilly, which has an enviable reputation through the Eastern and Southern States. It is doubtful if any of their flour has ever been shipped here, because they find a ready market for all they can make at home. Their Calla Lilly brand of flour sold last season for \$6.50 to \$6.85 per bbl. They make or draw off 10 per cent of patent flour, which sells for \$7.50 to \$8.25 per barrel by the car-load, and 7 per cent of double X, which sells for \$4.50 per barrel. They grind over 18 bushels of wheat on each run of stones. They make a barrel of flour out of less than 4½ bushels of wheat, and manufacture no flour that can be termed low grade. Their system of bolting is good, although not perfect. They have no room to put in a perfect system of bolting.

I will now describe our best American system of re-bolting flour, selected from our most successful and best paying mills. The numbers of silk given here are intended for medium grinding on American winter wheat, describing six reels in a chest of 20-ft. long and 30-in. diameter.

First reel is for scalping the bran, clothed with 10-ft. of No. 1, and 10-ft. of No. 0. The bran that passes over the tail of the reel is run to a bran duster or bran machine. The

meal from the first reel is run to the second, clothed with No. 6 silk the entire length. What passes over the tail runs to a purifier. The product, or what passes through No. 2 reel, send to No. 3, clothed with 8-ft. 6-in. No. 12 silk, and 8-ft. 6-in. of No. 18 silk, and 3-ft. of No. 5 silk. The flour that is clear at the head draw off to the packer, the residue send to No. 4 reel, clothed with 8-ft. 4-in. of No. 14 silk, and 3-ft. of No. 6; draw from the head what is clear, and send the residue to No. 5 reel, clothed with 8-ft. 8-in. of No. 14 silk, and 8-ft. 9-in. of No. 15, and 3-ft. No. 7 silk. Draw from the head and send to the packer. The residue send to the No. 6 reel, clothed with No. 16 silk. Return what passes through No. 6 reel to the reel that passes over the tail and send to the purifier. If the tallings from reels Nos. 3, 4, and 5 contain middlings, send them to No. 6 reel to be dusted.

By adding two more reels it will largely increase the capacity of the chest.

The next thing is how to arrange a chest for bolting patent flour, using three reels in a chest. Run the ground middlings to the first reel, clothed with 8-ft. 6-in. No. 12 silk, and 8-ft. 6-in. No. 18 silk, and 3-ft. of No. 7 silk. What is clean either run off to the packer for patent, or into a conveyor for mixing with the first flour.

The residue run to the second reel, clothed with 8-ft. 6-in. No. 13 silk, and 8-ft. 6-in. No. 14 silk, and 3-ft. of No. 8; send what is clear to the first reel, the residue send to the third reel, clothed with 10-ft. of No. 15 silk, and 10-ft. of No. 16 silk. Return what passes through the third reel to the chop or meal; what passes over the tail send to the purifier clothed with fine cloth for handling second middlings. Reels are made in America from 14-ft. to 30-ft. long, and 30-in. in diameter. They make about 30 revolutions per minute.

I will now describe the Union Steam Mills Co.'s past and present system of purifying. They are using seven of the Hunter purifiers, and operated when they were first put in the mill, the same as is advocated by suction machines. They divided their middlings on the two machines, and drew off what was considered good enough for the head of the first two, and ran the remainder to the other two and drew off from them and finished on the tallings machine. The fine was handled in the same manner—drawing off a part from the head of the first and finished on the second machine. It will be seen that middlings were drawn off from the three first machines, receiving only a single purification, and only a small portion received the second.

Their present system of purifying is as follows: They make over 20 per cent of middlings or upward of 80 barrels per day. They run all the middlings on the first purifier; what tails over is very poor; the whole product from the first machine is run to the second, and as before, the whole product of the second is run to the third, and the product from the third machine is run to the fourth. From the fourth purifier, the first part of the middlings is drawn off to the stone, near the tail end of the fourth purifier, and all the tallings from the four machines are run to the fifth, or tallings machine. From the head of the fifth the middlings are returned back to the first machine. The coarse and gummy part from the fifth is sent to the rolls to be crushed not into flour, but to free the middlings from the germ; run what comes from the rolls to a separating reel, clothed with Nos. 10, 4, 2, and 0 silks. What passes through No. 10 cloth, send to the chops; what passes through the coarser cloth send back to No. 1 purifier. Consequently all the middlings that run to the stone have had more than four purifications. I will now describe the purifiers for handling the second middlings and returns from the bolts if desired.

The sixth machine for fine middlings is clothed with fine cloth; all the middlings are run on to it, the product from the 6th is run on to the 7th machine and repurified; from the 7th purifier, the fine middlings stone is supplied, a portion that goes through the coarse cloth of No. 7, and the tallings from 6 and 7 are run to the tallings stone; from the tallings stone the 7 per cent of double X is made. It is impossible to make second middlings by adopting the above system.

If the Union Steam Mills Co. had adopted the new process or high grinding, and had reduced their capacity from 400 barrels a day to 150, it is doubtful if they could pay the expenses of running their mill. I think that there is not another mill in America that realizes more from a bushel of wheat. I could refer to other mills that have adopted my system and my machines which are doing equally well; for instance, the Holla Steam Mills Co.,

of Rolla, Missouri; they ran their mill for one year, and did not make a barrel of low grade, their flour graded as extra fancy and sold for 50 cents per bbl. more than any straight flour made in the State of Missouri. I could refer to others, but time and space will not permit. The practical working of the Union Steam Mills upsets the theory of new process milling, also of slow grinding in Great Britain. In order to grind fast, the stone must travel 2,000 feet per minute at the periphery.

What is it causes the wheat to travel from the eye of the stones to the periphery? Centrifugal force. Is not the meal kept as long between the stone with the runner making 120 revolutions per minute, and grinding eight bushels per hour, as with a stone making 165 revolutions and grinding fifteen bushels. A stone running at 165 will make whiter flour than can be made with a stone running 120. I may refer to a mill I visited the other day; they had five runs of 4-ft. buhrs, on wheat, two on middlings, and two runs of 3-ft. diameter on tallings, and five sets of rolls for crushing the coarse middlings and cleaning the bran. In 24 hours they made of choice flour 816 bbls., and 169 bbls. of patent, and 85 bbls. of fine, making 520 bbls. It would not pay to change that mill to a new process or gradual reduction. When they first started the mill they made about 250 bbls. under the new process, and their flour was not so good as they make now; the extra expense of making 250 bbls. per day was only the coal and a little extra labor. It costs about 30 cents to manufacture a barrel of flour, so that the extra 250 bbls. would make a net profit of about \$65 per day over slow grinding. I am not surprised that British and Irish millers distrust Americans, who come here to introduce or advocate new systems of milling.

What has been your past experience? Systems have and are being introduced here which have been discarded as impracticable and some of them worthless. Have not millers on this side paid dearly for processes guaranteed to enrich every miller in Great Britain? Have not, and are not Americans making themselves rich out of their discarded American processes? What evidence have you of the practical working of a system when you examine the work of a mill built expressly to exhibit the work of particular machines? In order to do the same kind of work can you afford to have a stone dresser work a month on the face of a pair of stones, to get them in perfect truth?

I could have brought middlings with me from the United States, ground and prepared so that my purifier would work to the best advantage, or I could have had them made for me here; but would it be any evidence that my purifier would work satisfactorily on your middlings? I would suggest that millers should test the different purifiers on their own middlings during the exhibition, and thus prove for themselves which machines are the best.

In speaking of the latest modes of milling, I would refer to the gradual reduction system, which in my opinion is the true system. There are two systems that are popular—both have ardent supporters—I mean the Roller and Jonathan Mills; both use from five to seven reductions; they claim in the first and second breaks to free the impurities held in the crease of the berry, where no brush nor scourer can reach, also to disintegrate the chit or germ, which is separated by passing the first and second breaks over a wire screen or bolt. We find the flour made from the first and second breaks is dark and full of impurities, which can not be cleared through a number 16 silk. Tests have been made in the same mill, using the stone and rolls for gradual reduction, on the same kind of wheat; the straight flour from the rolls was white, whilst the straight flour from the stones was dark, with a reddish cast. When the stone is raised sufficiently to merely break the wheat, it pulverizes the bran, which enters into the composition of the flour, and can not be separated except by a current of air.

If I were building a new mill, I would adopt the gradual reduction system by using the "Jonathan Mills" or the rolls for making the middlings, and the buhrs for converting them into flour. Nearly all the new American mills that are being built have adopted the gradual reduction system, and a number of mills that had adopted the new process, and could not make it pay, are changing their mills to the gradual reduction. What I wish to be understood by new process milling is extremely high and slow grinding, making about 50 per cent of middlings, about 15 per cent of low grade, and 85 per cent of an im-

pure flour. I do not know of a mill in America that has not adopted a new process. And why? Because their present milling differs from the old.

In presenting my views on milling I do not offer for sale any system, but tender my plan to millers gratuitously. That plan of milling can be vouched for by numerous millers who are successful in making the greatest quantity of high grade flour from a given quantity of wheat. In making purifiers I have carried out the principle further than any other person; not stopping with the perfect purification of middlings only, but have built a machine which purifies flour successfully. I offer the above remarks and suggestions without prejudice of nationality, being now an American citizen, but formerly a British subject.

NEWS.

EVERYBODY READS THIS.

ITEMS GATHERED FROM CORRESPONDENTS, TELEGRAMS AND EXCHANGES.

Canby, Minn., is to have a \$10,000 flouring mill.

Dead—Charles Bidwell, miller, of Watertown, Ct.

A. J. Wells & Co., of Shiloh, Ky., have sold their mill.

BURNED.—M. G. & N. Sage's flour mill at Elkhart, Ind.

A new grist mill is being built at West Farmington, Me.

Revert & Speck, millers, succeed Revert & Co. at Tiffin, Ohio.

Daniel Bucher, miller at Blandon, Pa., has made an assignment.

Wm. W. Hatch of Lowell, Mich., has sold his mill to Shift Bros.

BURNED.—Chase & Blanton's mill at Indianapolis, Ind. Insured.

Riemer & Krause of Meredonia, Ill., millers, have made an assignment.

BURNED.—The Davenport Oat Meal Mill, Davenport, Iowa. Insured.

P. Klock's flour mill near Fond du Lac, Wis., was burned May 26th.

Ulmer & Krader is the name of the new milling firm at Chillicothe, Mo.

BURNED.—June 24th, P. B. Holden's mill at Findlay, O. Insurance, \$3,000.

Messrs. K. Alechire & Co., millers, of Gallipolis, Ohio, have made an assignment.

The Borzig Mills, Berlin, Germany, were recently considerably damaged by fire.

Lowther & Lawson's flour mill at Oxford, W. Va., burned recently. No insurance.

D. C. Sortwell's grist mill at North Ridgeville, O., burned. Loss \$8,000. Insurance \$6,000.

W. G. Rifenburg, miller, at Trinidad, Col., has "made his pile" and retired from business.

Shed & Graver, of Watertown, N. Y., have dissolved partnership. Shed continues the business.

R. T. Davis' mill at St. Joseph, Mo., was damaged by fire recently, but the loss was covered by insurance.

BURNED.—The grist mill at Franklin, Tenn., was burned June 19th. Loss, \$7,000. Cause, supposed to be incendiarism.

R. C. Tinley & Bro's. flour mill at Gloucester C. H., Va., was damaged by fire recently to the extent of \$2,000. No insurance.

J. D. Bowersock, the well-known Kansas elevator owner, miller and banker, has recently been elected mayor of Lawrence, Kan.

Ritter & Horton, of Palmyra, Wis., will commence building a new dam and mill immediately. Their mill was burned last winter.

The Fergus (Minn.) Flouring Mill Co. have recently added seven sets of rollers and three run of stone, and now have a capacity of 250 barrels per day.

Heck Bros., at Tecumseh, Mich., are getting considerable machinery from Nordyke & Marmon Co., of Indianapolis, Ind., to be used in remodeling their large mill.

Howorth & Anderson, of Galesburg, Ill., are putting in rolls, purifiers, middlings buhrs, and other machinery made by Nordyke & Marmon Co., Indianapolis, Ind.

S. & E. J. Rambo's mill at Dresden, O., is undergoing extensive repairs. Machinery made by Nordyke & Marmon Co., of Indianapolis, Ind., is being used in the repairs.

A new mill is going up at Exira, Iowa, for Wm. Gransberry; driven by a 40 horse-power engine, all of which is being made by Nordyke & Marmon Co., Indianapolis, Ind.

The mill at Thorntown, Ind., just purchased

by Witt & Bro., is being thoroughly remodeled to the new process with machinery made by Nordyke & Marmon Co., of Indianapolis, Ind.

J. H. McQuown, of Kirkwood, Ill., is building a four-run new process mill, to be driven by a steam engine, all of which has been purchased of Nordyke & Marmon Co., of Indianapolis, Ind.

Nordyke & Marmon Co., of Indianapolis, Ind., are building a 125 barrel gradual reduction mill for R. D. Roberts, at Monticello, Ind. This mill will be operated on the Jonathan Mills system.

The well-known firm of Thos. Bradford & Co., manufacturers of and dealers in millstones and flour-mill machinery at Cincinnati, O., has dissolved. C. L. Gano, Jr., will continue the business.

Perry Swickard, of Janesville, Ill., has ordered of Nordyke & Marmon Co., of Indianapolis, Ind., a steam mill outfit having two run of buhrs. The machinery will be set up at the above place.

Mr. Horace Davis, owner of the Golden Gate flour mills in San Francisco, recently purchased a number of roller mills from Messrs. Seck Bros., of Bockenheim, Frankfurt-A.-M., Germany.

Alfred Graham, of McFall Station, Mo., is building a three-run mill at the above place, to be driven by a new engine, all of which comes from the shops of the Nordyke & Marmon Co., of Indianapolis, Ind.

BURNED.—May 24th, Prietz & Deuster's flouring mill at Preble, Brown Co., Wis., was destroyed by fire. The fire originated among the middlings purifiers, and an explosion followed. Loss, \$5,000. No insurance.

BURNED.—June 17th, Samuel Keeley's flouring mills at Cambria, Wis. Loss, \$12,000. Insurance, \$7,200. The mill had a capacity of 125 barrels per day, and was run by both steam and water power. It will probably be rebuilt this season.

The mill of O. K. Olmstead, at Orleans, Neb., which was washed away during the spring freshets, is to be rebuilt with an entire new outfit of machinery, which is being manufactured at the shops of Nordyke & Marmon Co., of Indianapolis, Ind.

The wheat remaining in the elevator which was lately burned at Faribault, Minn., was sold at auction lately to Knox & Martin, of Milwaukee, for \$5,050. There were 40,000 bushels in the elevator when it was burned, and they expect to get out about 20,000 bushels, nearly all of which will be more or less damaged by smoke.

The following parties have bought the Galt Combined Brush and Smutter, made by the Eureka M'fg. Co., Rock Falls, Ill.: W. & E. Thomas, Milford, N. J.; Smith Bros., Cochran, Pa.; M. Shultz, Shipman, Ill.; W. B. Wilson & Bro., Huntington, W. Va.; U. Mendenhall, Hancock, Md.; Wm. Porter, Clearfield, Pa.; Rank Bros., Canton, O.; Peter M. Walker, Logansport, Ind.; Chas. Durr, Eudora, Kan.; A. J. Conant, Kuttowa, Ky.

In a recent letter from the Case Manufacturing Co., of Columbus, O., they mention that they are making a gradual reduction machine on a new plan that has every promise of being a grand success. In price it will be within the reach of all millers. The millwrighting will be all done at their factory before the machine is shipped. Many millers are waiting to see it placed in a mill near Columbus, O., where they can see it. The same company also mention their purifier as steadily gaining favor, and it is meeting with success in all sections of the country.

The following parties have lately bought the Becker Wheat Brush, made by the Eureka M'fg. Co., of Rock Falls, Ill.: Henry Keiser, Bloomington, Ill.; Wm. Pollock, Slater, Mo.; B. J. Abbott, Newport, Ind.; Morris, Harris & Co., Auburn, Ill.; Smith Bros., Cochran, Pa.; J. P. Laurson, Oneida, Ill.; H. D. Crane & Co., Ottawa, Kan.; A. Lane, Nechanic, N. J.; John Schartz, Zimmerman, O.; Rector & Son, Nebraska City, Neb.; Sunderland & Heiser, Burlington, Ia.; Haywood & Son, Flora, Ill.; A. B. Searles, Belvidere, N. J.; M. C. Dow & Co., Cleveland, O.; B. F. Gump, Chicago, Ill.; W. H. Berry, Celina, O.

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Boots, Penholders, Belting, Shoes, Inkstands, Packing, Coats, Door Mats, Hose, Cloaks, Door Springs, Mirrors, Gloves, Toilet Sets, Sheetings, Combs, Horse Covers, Diapers, Balls, Wagon Covers, Syringes, Dolls, Plant Sprays, Tubing, Bands, Umbrellas, Brushes, Hats, Toilet Sets, Jewelry, and everything else made of Rubber

Table and Carriage Oil Cloth, Leather Belting and Lacing
Cape Ann Oil Clothing
AT NEW YORK PRICES.
GOODYEAR RUBBER CO.,
JAS. SUYDAM, Agent,
372 and 374 East Water St., MILWAUKEE, WIS.
The only store in Wisconsin or Minnesota connected with Goodyear Rubber Co., New York.

About two o'clock last Saturday afternoon George F. Strait & Co.'s large wheat warehouse at Shakopee, Minn., containing about 3,000 bushels of wheat, collapsed, and the whole building is a mass of broken timbers, shingles and wheat. It was caused by the softening of the earth under the foundation, owing to the recent heavy rains.

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STEVENS' ROLLER MILLS.



There is no system of milling producing such good results as those effected by the Stevens' Rolls. They granulate without cutting, therefore making broader bran without rasping the impurities—consequently purer middlings, all of which are much easier to purify.

No out bran and middlings adhering together as is the case in results produced by other than non-cutting rolls. They remove cockle shell without cutting—it passing off with the bran. They remove every germ without cutting or mashing.

The frame and adjustments as now made are the most simple and effective in the world. The most inexperienced can set them absolutely correct, because the gauge and indicator tells their own story. This fact alone is of the greatest importance to the proprietor.

With it in his mill he is not so entirely dependent on the judgment of his miller who may be inexperienced, or possibly careless, which inefficiency or neglect may daily cost a great deal of money. Have now got the best belt movement out, and can furnish either the belt or gear machine.

Millers come and see for yourselves. Can take you through any number of mills that are free for your examination from collar to garret.

I also keep on hand a full supply of staple mill furnishing goods. Bolting cloths made up in best manner on short notice. Plans and specifications furnished.

Address or call upon

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Representing Jno. T. Noye & Sons, Buffalo.

(Please mention this paper when you write us.)

FOR SALE.

A good water power and mill with two run of stone at Stone Bank, Waukesha County, Wis. Mill is doing a good business, which with a moderate amount of improvements could be largely increased. One half or the whole will be sold to the right party. For full particulars address **U. S. MILLER, Milwaukee, Wis.**

Mill For Sale on Easy Terms.

A steam grist mill, with four run of buhrs, separator, smutter, purifier and bran duster—all latest improved machinery. It is in a good wheat growing country. For particular apply to the owners.

LANDIS & HOLLINGER,
Sterling, Kansas.

FOR SALE CHEAP.

A four-run Custom and Merchant Flouring Mill; all in good repair. Good water power, 12½ feet head. This mill has a first-class reputation for doing all kinds of work. It is located in a good wheat growing section. This property positively must be sold. For further particulars call on or address **HOLT BROTHERS,** North Lake, Waukesha Co., Wis.

FOR SALE.

A Flouring Mill of the latest improved gradual reduction roller system, together with 80 acres of good land, good house and barn, located on the Iowa River, 8 miles northeast of Cresco, at Kendallville. The property must be sold, and a great bargain will be given. Death of my husband, S. S. Kendall, is the reason for offering the above property for sale. For further particulars address **MRS. S. S. KENDALL, Administratrix,** Kendallville P. O., Winnebago Co., Iowa.

Mill For Sale—A Rare Bargain.

Desiring to turn my full attention to other business I offer for sale my Mill Property in Ripon, Wis. The mill is 40x80 and four stories high with additions 4x44 and 30x40, and cooper shop. Power: 30 feet head, 3 13-inch turbines, also 75 horse power engine with two boilers. Has 2 wheat stones, one middlings and a feed run, 2 purifiers, flour packer, separator, smutter, corn sheller, etc. Handsome dwelling house can be had with the mill. It has all conveniences and modern improvements. Good schools and college in the city. Any one desiring to go into the milling business, should not fail to examine this property. When you write me please mention the *United States Miller*. Address **H. B. BATEMAN, Ripon, Wis.**

IMPORTANT NOTICE TO MILLERS.—The Richmond Mill Works and Richmond Mill Furnishing Works are wholly removed to Indianapolis, Ind., with all the former patterns, tools, and machinery, and those of the firm who formerly built up and established the reputation of this house; therefore, to save delay or misarrangement, all letters intended for this concern should be addressed with care to Nordyke & Marmon Co., Indianapolis, Ind. (Mention this paper when you write us.)

MILL FOR SALE.

This mill is new and in good repair, situated on the Big Blue River, 6 miles north of Beatrice, Neb.; is a three-story frame building, 26x36 feet; 4 run of stone; 66-inch Improved Turbine Water Wheel. This mill must be sold within the next 90 days. Enquire of **JOHN ROBERTSON, Beatrice, Neb.**

EVERY MILLER IS INVITED

To write to some other miller using the Case Purifier. There is no doubt about its being

The Purifier of the Times.

It is about one half cheaper, capacity considered, than any Purifier in the market.

We would rather have it than two Purifiers of any other make. W. F. HAMBAUGH & CO., Clarksville, Tenn. We believe it to be the best machine on the market. **BALDWIN & EULLER, Ottawa, Kansas.** Can govern it to do anything we want. It could do no better. **CAMAN & McFARLAN, Urbana, Ohio.** For all particulars address

CASE MFG CO., Columbus, O.

(Please mention this paper when you write us.)

Millers, Attention!

You can successfully purify the chop from either Stone or Rolls with the

Wheat Meal Purifier.

Satisfaction Guaranteed or No Sale.

THIRTY DAYS' TRIAL.

Send for circular and full particulars to

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(Mention this paper when you write us.)

"THE GREAT ROCK ISLAND ROUTE"

Call your attention to the following REASONS WHY, if about to make a Journey to the GREAT WEST, you should travel over it:

As nearly absolute safety as is possible to be attained. Sure connections in UNION DEPOTS, at all important points. No change of cars between CHICAGO, KANSAS CITY, LEAVENWORTH, ATCHISON or COUNCIL BLIFFS. Quick journeys because carried on Fast Express Trains. Day cars that are not only artistically decorated, but furnished with seats that admit of ease and comfort. Sleeping cars that permit quiet rest in home-like beds. Dining cars that are used only for eating purposes, and in which the best of meals are served for the reasonable sum of seventy-five cents each. A Journey that furnishes the finest views of the fertile farms and pretty cities of Illinois, Iowa and Missouri, and is afterwards remembered as one of the pleasant incidents of life. You arrive at destination rested, not weary; clean, not dirty; calm, not angry. In brief, you get the maximum of comfort at a minimum of cost.



That the unremitting care of the Chicago, Rock Island & Pacific Railway for the comfort of its patrons is appreciated, is attested by its constantly increasing business, and the fact that it is the favorite route with delegates and visitors to the great assemblies, political, religious, educational and benevolent, that assemble from time to time in the great cities of the United States, as well as tourists who seek the pleasant lines of travel while en route to behold the wonderful scenes of Colorado, the Yellowstone and Yosemite. To accommodate those who desire to visit Colorado for health, pleasure or business, in the most auspicious time of the year, the Summer season and months of September and October, the Company every year puts on sale, May 1st, at all coupon ticket offices in the United States and Canada, round trip tickets to

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At reduced rates, good returning, until October 31st. Also to San Francisco, for parties of ten or more, good for ninety days, at great reduction from regular fares.

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Picks will be sent on 30 or 60 days' trial to any responsible miller in the United States or Canada, and if not superior in every respect to any other pick made in this or any other country, there will be no charge, and I will pay all express charges to and from Chicago. All my picks are made of a special steel, which is manufactured expressly for me at Sheffield, England. My customers can thus be assured of a good article, and share with me the profits of direct importation. References furnished from every State and Territory in the United States and Canada. Send for Circular and Price List. Jan

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210, 212, 214 FLORIDA STREET,



Is furnishing Mills and Elevators in all portions of the Country with their superior BUCKETS. They are UNEQUALLED for their STRENGTH and DURABILITY. Leather, Rubber, Canvas Belting and Bolts at lowest market rates. We have no traveling agents. Sample buckets sent on application. Large orders will receive liberal discounts. Send for sample order. Address all inquiries and orders to **L. J. MUELLER, 197 Reed St., Milwaukee.** (Mention this paper when you write us.)

Unsurpassed in Power at "Part Gate." Warranted to give full satisfaction.

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Most Perfect Turbine in Use.

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Address: **T. C. ALCOTT & SON,** Mount Holly, N. J.

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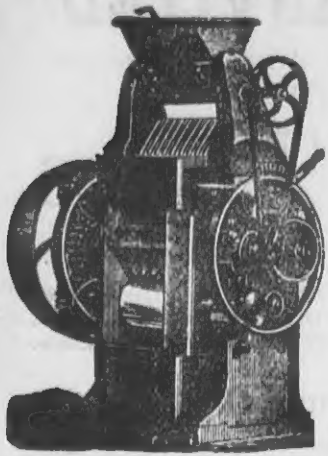
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A Mill in Sheboygan County, Wis., with a large custom trade, unlimited water power, and four run of stone. Will be sold on reasonable terms. Full information will be given at 106 West Water Street, Milwaukee, Wis.

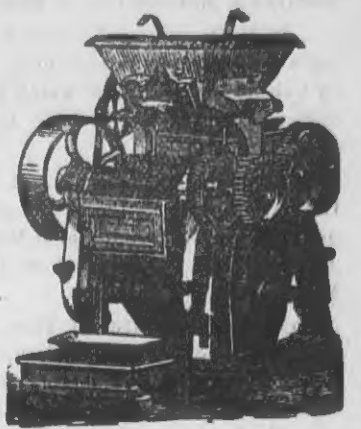
VIENNA EXHIBITION. 1873, Awarded Diploma of Honor.

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GANZ & CO., Iron Foundry and Manufacturing Association,

Buda-Pesth, Hungary; or Ratibor, Germany.



We take this method of recommending to the American milling public our PATENT ROLLER MILLS with chilled cast iron rollers, for crushing and grinding wheat, which have met with such eminent success in Europe. The mill-owners of BUDA-PESTH, as well as the prominent millers of Austro-Hungary, and a large number in Southern Germany, Switzerland and England, have provided for their mills the celebrated GANZ ROLLER MILLS, which are about to supplant entirely grinding on mill-stones, their working being more perfect, producing more white flour, requiring less power than the best mill-stone, and wanting no repairs excepting to occasionally replace a bearing. We have introduced into the art of milling these Roller Mills with chilled cast iron rollers, and from 1874 to January, 1879, we have delivered in the different European countries, Africa and the United States of America about 2,100 mills, and all work satisfactorily. Our crushing mills may now be regarded as absolutely necessary for every well-furnished modern mill, and this is proven by the numerous testimonials at hand. Our grinding mills are remarkable for their absolute discharge bearings, by means of the newly-devised Anti-Friction Pressure Rings. These Rings allow a very high pressure, and hence assure the performance of a great deal of work, avoiding all waste of power caused in other machines by friction in the bearings.

Out of numerous testimonials at hand we select the following:

BUDA-PESTH, March 28, 1878.—To Messrs. Ganz & Co., Foundry and Engineering Co., Limited, Buda-Pesth: Complying with your request to communicate to you my experience with your Roller material, I have pleasure in stating that I consider it, i. e., your generally well-famed chilled iron, as the best within my experience, and its adoption has satisfied me in every respect, so that I do not hesitate to assert, by introducing it on a large scale, you have rendered a considerable service to the milling art. Your material is equally well adapted for rough grinding, softening or grinding. Owing to its great hardness I cannot characterize it otherwise than indestructible. The grooved cracking rollers have demonstrated this hardness, as also a toughness, of your castings in a manner which astonishes all who know the rapid wear of cutting edges used in the treatment of grain. Your smooth rollers, once properly ground, preserve their complete cylindrical form, and do not require any repairs for a period which even now cannot be estimated. They acquire, soon after being put to work, a finely-gritted surface texture, eminently adapted for grinding as well as for drawing down the meal, a condition which they preserve without change. It is quite superfluous to prove that there can be absolutely no question of discoloring unless with reference to new rollers, to which some remnants of oil, emery or other matter may yet adhere. The flour produced by your Chilled-Iron Rollers is very lively and has remarkable baking qualities. While stating the above to the best of my conviction in answer to your inquiry, I seize with pleasure this opportunity to express to you my thorough approbation, not only of your roller material, but also generally of your roller mill construction. Your rough grinding (cracking) with chilled-iron roller mills constitutes such an essential step in advance as compared to the rough grinding with stones, that they cannot fail to win their way into every well-built mill, working on the high or half-high grinding system. For the purposes of reduction to flour you have lately erected a form of mill which I consider extraordinarily successful. You have by the introduction of an entirely new mechanical organ, i. e., the Rotary Anti-Friction Springs Pressure Ring, solved the problem of discharged bearings, which has so often been raised and as often dropped again unanswered. You have achieved success with decided aptitude in a manner as wondrous as it is simple and practical. This Roller Mill absorbs, in fact, only just the power required for the reduction into flour, and none for bearing friction which, usually, as is well known, amounts to a high figure. This Flour Mill receives an agreeable and light form while attaining a capacity hitherto unknown. In handing you the above communication for use as you may deem desirable, I remain, etc.,

(Signed) C. HAGGENMACHER, Director of the First Ofen-Pesth Steam Mills.

TIVOLI KUNSTMUEHLE, Munich, April 5, 1878.—To Messrs. Ganz & Co., Engineers, Buda-Pesth—Dear Sirs: In reply to your esteemed of March 28, we have pleasure in testifying to our satisfaction with the Chilled-Iron Rollers

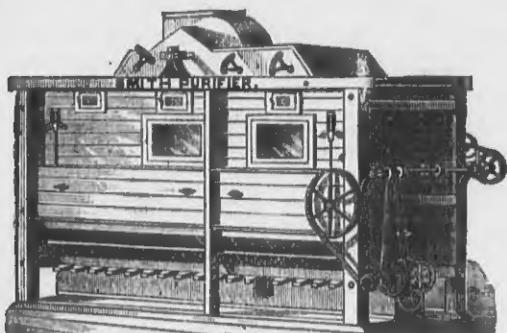
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Cable Address "GANZ, Kaiserbad."

Or GANZ & CO., Ratibor, Germany.

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SIMPLE, DURABLE, ECONOMICAL. Cheaper than any other of EQUAL CAPACITY. Licensed under all patents owned by Consolidated Middlings Purifier Co. Eight sizes single and three sizes double machines.

THE GEO. T. SMITH MIDLINGS PURIFIER

Was awarded THE HIGHEST PRIZE ever offered for the competition of milling machinery—THE LOCKWOOD MEDAL—at the great Exposition. Competition and comparison with every other known Purifier only established it more firmly in the esteem and approval of millers and mill-owners.

It was UNANIMOUSLY awarded the FIRST PREMIUM in its class by a jury of five of the ablest, most successful and experienced mill-owners in the United States, men who represented the milling of every variety of wheat, and the use of all the latest and most approved methods of new process and gradual reduction milling.

Our sales during the Exposition aggregated OVER ONE HUNDRED MACHINES, for every part of the country and for work on all kinds of stock.

We invite particular attention to our SPECIAL machines, combining in one all the features of both air and sieve Purifiers, perfectly adapted to handle and purify the breaks of roller mills.

Write for descriptive circular and price list to the

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Manufacturers and Sole Proprietors of the

BECKER BRUSH

Galt's Combined Smut and Brush Machine.

The Only Practical Cone-Shaped Machines in the Market, and for that Reason the Best.

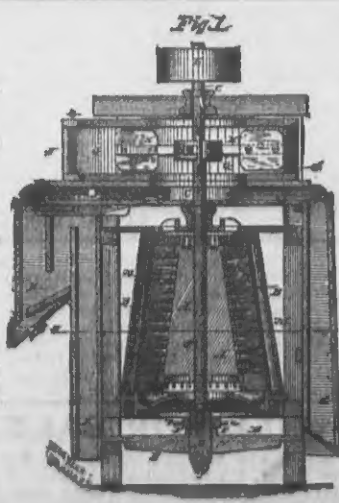
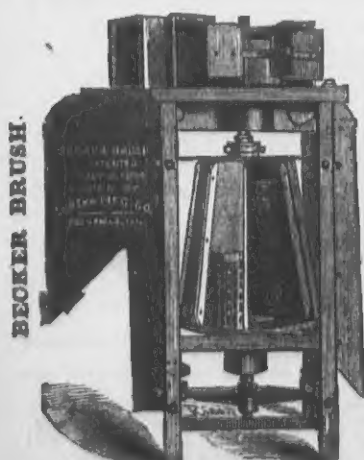
ADJUSTABLE WHILE IN MOTION.

Nearly 1,000 of these Machines in Use

In the United States and foreign countries, and so far as we know all that use them are pleased. Millers, millwrights and milling experts claim the Cone Shape Solid Cylinder Brush is the true principle to properly clean grain. All machines sent on trial, the users to be the judges of the work. For prices and terms apply to

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THE LOCKWOOD MEDAL, "Awarded to the Geo. T. Smith Middlings Purifier, as the machine marking greatest progress and utility in its application to the grain and milling interests, invented within the last ten years."

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1865.

1881.

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Manufacturers of the Purest and Best

Lubricating and Burning Oils

GREASES, ETC.

For Flour Mill Machinery,
SPECIALTIES,

MILLERS' CASTOR

Machinery Oil.

A compound oil, warranted better than Lard or Sperm Oil for machinery uses, and will last longer. Guaranteed not to heat or gum, and to give satisfaction when used on steps, spindles, etc.

MILLERS' LAMP OIL.

Warranted free from Petroleum. Burns equal to Lard or Sperm Oil. Will not chill at 32° above zero, and much cheaper than Lard Oil.

GLOBE A, Natural W. Virginia Rock Oil.

A perfectly natural oil, just as it comes from the earth. Thoroughly settled and refined of high fire test, and will not congeal at zero. It is the best Black Oil produced.

Peerless Mill Doap.

A compound Grease for use on oaks and all heavy gearing. Put up in kegs, half barrels and barrels.

CAPITOL CYLINDER OIL.

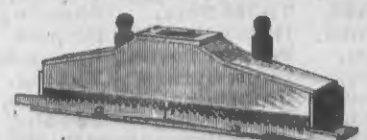
Manufactured for Steam Cylinders, especially for use in Patent Lubricators. Warranted not to foam, heat or gum, and endorsed by manufacturers of Corlies Engines. We also have all grades of Sperm and Golden Machinery, Lard, Engine, and several grades of Cylinder and Black Oils, Plumbago, Cotton Waste, etc., etc., which we will offer at prices that defy competition, when quality is considered. Orders and correspondence solicited.

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130 WEST WATER STREET, MILWAUKEE, WIS.

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The Perfect Feed Box.



It insures a perfectly even distribution of the middlings over the entire width of the cloth. Every miller will appreciate this. Fits all purifiers. Address

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